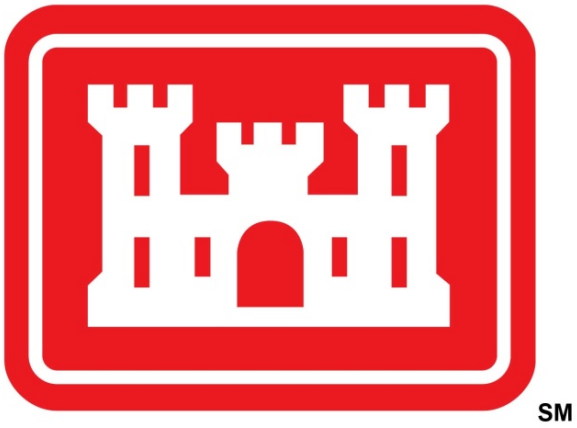

DESIGN ANALYSIS

U.S. ARMY
CRIMINAL INVESTIGATION COMMAND

(CATEGORY CODE 14114)

ADAPT-BUILD BIM PROTOTYPE OF THE

RA 10-15 FIELD OPERATIONS FACILITY FOR THE REGION

REPRESENTED BY FORT DRUM, NEW YORK

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EXECUTIVE SUMMARY

This Design Analysis has been prepared for the U.S. Army Criminal Investigation Command (CIDC) RA 10-15 Adapt Build facility. The RA 10-15 building has been developed for a generic site at Fort Drum, New York. This document presents the design objectives, general information, design criteria and assumptions, and technical calculations for the project.

This Design Analysis has been developed in association with the Building Information Model (BIM) of the RA 10-15 Adapt Build facility. The project drawings are contained as 'sheets' within the BIM, with rare exception. The BIM Execution Plan is an important document which is to be used in conjunction with this Design Analysis.

The Design Analysis and Adapt Build BIM are intended as a guide to an A/E who is designing a CIDC project, and intended to establish a consistent baseline for new facilities. As a design professional the A/E is responsible for designing the project in accordance with all federal requirements and sound architectural and engineering practice. Creative interpretation of this work is encouraged as each future CIDC project shall be located at a unique location, and may have some unique requirements and features.

The CIDC Adapt/Build models were developed to varying levels of design effort. The Architectural component was developed to approximately 60%. The remaining engineering disciplines, with the exception of Civil, were developed to between 30%-35% design levels. Without a specific site to reference the Civil portion was limited to a 10% design level.

[NOTE to AE: The CIDC Building Design Criteria provides the basic guidelines for evaluation, planning, programming, and designing new and renovated CIDC facilities. The criteria contained in that document establish the baseline level of features to be provided in these facilities. Planning, design, operation and maintenance of CIDC facilities shall comply with Army Military construction (MILCON) requirements, MILCON Best Practices, Corps of engineers, Norfolk District (NAO) Design Guidelines, and the Activity's Installation Design Guide.

Design and construction shall use the latest Unified Facilities Criteria (UFC), Unified Federal Guide Specifications (UFGS) and other applicable codes, regulations, Technical Instructions and Manuals, and criteria. The document is intended to supplement other applicable codes and standards, without repeating the common requirements found in those documents.

Note that the design shall comply with ANSI/ASHRAE 189.1 Standard for the Design of High-Performance Green Buildings.]

1 GENERAL DESCRIPTION

The U.S. Army Criminal Investigation Command (CIDC) is the Army's primary investigative organization and the premier investigative organization of the Department of Defense. The CIDC is responsible for conducting criminal investigations in which the Army is, or may be, a party of interest. Investigations range from death to fraud to computer crime, and can occur both on and off of military installations.

The CIDC deploys highly trained special agents and support personnel, a certified forensic laboratory, protective services units, computer crime specialists, polygraph services, criminal intelligence collection and analysis, and a variety of other services normally associated with law enforcement investigation activities.

The CIDC buildings are Category Code 14114 facilities. A Project Tracking Sheet is in Appendix A.

1.1 FACILITY DESCRIPTION

1.1.1 RA 10-15 Field Operations Building

The CIDC RA 10-15 field operations buildings house command, operation and administrative functions assigned to the U.S. Army Criminal Investigation Command. The estimated occupancy of the RA 10-15 facility is 19 people.

The *front* of the facility is designed for visitors, CIDC agents, and administrative staff; the *front* of the facility also includes support areas such as Restrooms, Showers, and a Multipurpose Lounge. The *back* of the facility is designed for suspects (Waiting, Interview Rooms, and polygraph areas), Evidence (Collection, Processing, and Storage) and other support areas (Vault, Equipment Storage). The *front* of the facility shall be identified as the administrative area and the *back* of the facility shall be identified as the suspect area.

1.1.2 Vehicle Processing Building

The Vehicle Processing Building shall be located adjacent to the Field Operation Building. This building allows for control and inspection of vehicles in order to collect evidence. This evidence may be retrieved by disassembling and removing parts, taking samples, inspection of the vehicle, and/or draining fluids.

The Vehicle Processing Building is detached from the main building, and shall be located outside of the ATFP stand-off distance.

1.1.3 Building Occupancy

The CIDC RA 10-15 building is classified as a Business Occupancy (Group B). The Vehicle Processing Building is considered a Storage Occupancy – Moderate Hazard (Group S-1; Motor vehicle repair garages complying with the maximum allowable quantities of hazardous materials).

1.1.4 Building Construction

Based on building size, the construction type shall be Type IIB (Non-combustible, Unprotected) as defined by the International Building Code. The Vehicle Processing Building shall also be constructed as

Type IIB (Non-combustible, Unprotected). Based on the location of the Vehicle Processing Building relative to the adjacent property line, as shown on the Site Plan, the West exterior wall of the Vehicle Processing Building is required to have a fire rating of 1 hour. (Also see section 2.6 Fire Protection)

1.1.5 Accessibility Requirements

The CIDC RA 10-15 facility is designed and shall be constructed to meet Department of Defense accessibility standards as presented in the ABA/ADA Guidelines.

1.1.6 Site Design and Construction

ABA/ADA compliant access from the parking areas and site walks to the building shall be provided.

Accessible parking stalls and pathways for both staff and visitor parking areas shall be provided.

Accessible vehicle parking signage and pavement markings shall be provided.

Parking areas located within the secure (fenced) government-vehicle parking area shall be used only by able-bodied personnel in government vehicles, and for storage of impounded vehicles retained as evidence, and are not required to meet accessibility requirements.

1.1.7 Facility Design and Construction

The main building entrance and secondary entrances, located outside of the secure (fenced) government vehicle parking area, shall be accessible.

Provide ABA/ADA required clearances and door approach clearances in the building main entrance as well as at secondary entrances located outside of the secure (fenced) government vehicle parking area.

Accessible drinking fountains and Multipurpose Lounge facilities shall be provided.

Accessible public restroom facilities, located near the Main Entrance, shall be provided.

1.1.8 Building Area

The maximum authorized gross building area for the RA 10-15 facility is 11,472 square feet. This area total includes both the RA 10-15 building (10,704 square feet) and the Vehicle Processing Building (768 square feet).

1.1.8.1 Area Definitions

Gross Area: Gross building area is measured to the outside face of exterior enclosure walls. Gross area includes floor areas, penthouses, mezzanines, and other spaces as noted below:

Half Space: Areas calculated as half space. Gross building area shall be calculated in accordance with TI 800-01 Design Criteria – Appendix B, CIDC:

Excluded Space: Some spaces are excluded from the gross area calculations, including roof overhangs used for weather protection, mechanical equipment platforms, and catwalks.

Net Area: Net area is measured to the inside face of the room or finish walls.

Net Area Requirements: Net area requirements for programmed spaces are included in this chapter. If net area requirements are not specified, the space shall be sized to accommodate the required function and to comply with code requirements, overall gross area limitations, and any other requirements.

1.1.9 Common Area

Public Restrooms are located adjacent to the Lobby area and shall comply with the ABA/ADA accessibility requirements.

Vestibules are provided as enclosed transition spaces between the outdoor environment and the building interior. A minimum distance of 7 feet is provided between the interior and exterior Vestibule doors.

Mechanical, Electrical, and Telecommunications Rooms: The Mechanical Room is designed to allow space for equipment maintenance and repair access without having to remove other equipment. Mechanical, Electrical and Telecommunications Rooms shall be keyed separately for access by maintenance personnel.

Exterior access only is provided for the Mechanical and Electrical Rooms. The size of the Telecommunications Room (TR) for the RA 10-15 facility complies with the minimum requirements of I3A (2.5.2) and ANSI/TIA/EIA-569-B.

Recycling Storage: A Recycling storage area is provided in the building. The Recycling Storage area is sized to accommodate recyclable containers, with adequate circulation space to allow access to move each container in and out of the Recycling Storage area.

Materials to be recycled include paper, corrugated cardboard, glass, plastics, and metals. An area shall be provided for collection and storage of fluorescent and HID lamps and ballasts.

2 DESIGN REQUIREMENTS AND PROVISIONS

The CIDC Facilities Building Design Criteria provides the basic guidelines for evaluating, planning, programming, and designing new CIDC facilities. The criteria contained in this document establish the baseline levels of features, spaces and finishes to be provided in these facilities. Planning, design, operation and maintenance of CIDC facilities shall comply with Army Military Construction (MILCON) requirements, MILCON Best Practices (MBP), and Corps of Engineers, Norfolk District (NAO) Design Guidelines. Design and construction shall use the latest Unified Facilities Criteria (UFC), Unified Federal Guide Specifications (UFGS) and other applicable codes, regulations, Technical Instructions and Manuals, and criteria.

- U.S. Army Corps of Engineers Criminal Investigation Command (CIDC) Facilities Building Design Criteria, 12 December 2011
- Architectural Barriers Act (ABA/ADA) Accessibility Standard for Department of Defense (DoD) Facilities; as directed by Secretary of Defense Memorandum, 31 October 2008
- Army Regulation (AR) 405-70 Utilization of Real Property
- AR 420-1 Army Facilities Management
- AR 195-5 Evidence Procedures
- AR195-6 Department of the Army Polygraph Activities
- AR 190-11 Physical Security of Arms, Ammunition, and Explosives
- Technical Criteria for the Installation Information Infrastructure Architecture,
- (I3A Technical Criteria), dated February 2010
- Fort Bliss Installation Design Guide and East Bliss ADG
- Technical Guide for the Integration of the Secret Internet Protocol Router Network (SIPRNET) published by USAISEC Criteria
- UFC 1-200-01 Design: General Building Requirements
- UFC 3-120-10 Comprehensive Interior Design
- UFC 3-400-01 Energy Conservation (with 2008 revisions)
- UFC 3-520-01 Interior Electrical Systems
- UFC 3-530-01 Design: Interior and Exterior Lighting and Controls
- UFC 3-550-01 Exterior Electrical Power Distribution
- UFC 3-600-01 Fire Protection Engineering for Facilities
- UFC 3-580-01 Telecommunications Building Cabling Systems Planning/Design
- UFC 4-010-01 Department of Defense Minimum Anti-terrorism Standards for Buildings

- UFC 4-021-01 Design and O & M: Mass Notification Systems
- National Fire Protection Association (NFPA) Codes and Standards

2.1 SITE PLANNING AND CIVIL ENGINEERING

2.1.1 Site Planning and Civil Engineering

NOTE to Civil AE site designer from the developers of the Criminal Investigative Command (CIDC) prototype.

The site designer for the CIDC facility must have an understanding of the user's requirements, the governing design criteria requirements and the local requirements. You are responsible for integrating these elements (and more) into the final site design. The design shall be in accordance with CIDC Building Design Criteria, the US Army Corps of Engineers Design Guide, the Base Installation Design Guide, and the pertinent Unified Facilities Criteria.

The Criminal Investigative Command (CIDC) Building Design Criteria contains information specific to the user. Overall design guidance is located in Chapter 1. Site planning and civil engineering criteria are located in Chapter 3.

The USACE Norfolk District Design Guide (NAO DG) provides design criteria requirements for the development and preparation of the contract documents. These include plans, specifications and the design analysis. The NAO DG contains discipline specific sections (e.g. Civil, Architectural, Mechanical, and Electrical). Each section includes a detailed outline of the criteria requirements for the corresponding discipline.

Project Specific Information

The CIDC Adapt/Build documents were developed to varying levels of design effort. The Architectural component was developed to about 60%. The remaining engineering disciplines, with the exception of Civil, were developed to between 30%-35% design levels. Without a specific site to reference the Civil portion was limited to a 10% design level. The Civil AE is responsible for developing the site design from site selection to final development after a specific site has been selected.

The site plan depicted in the Adapt/Build prototype is a schematic site plan. It indicates the general quantities and relationships of visitor parking, staff parking and secure government vehicle parking as well as antiterrorism/force protection (ATFP) setbacks and unobstructed zones around the building.

The following comments are intended to emphasize and clarify certain design elements for the site designer:

1. *Site Geometry:*
    a. *The portion of drive between the staff parking and the visitor parking may be omitted if access to both can be otherwise accommodated (i.e. by virtue of location on a corner lot) and if the Local Authority Having Jurisdiction (AHJ) does not require it for emergency perimeter access.*

2. *Secure Government Vehicle Area*
    a. *There are two vehicle access points depicted on the prototype site plan. One is a sliding motor-operated gate. The other is a double swing gate.*
        i. *The emergency double swing gate access need not be provided if not required by the AH. The designer is to verify these requirements. The preference is generally to omit this feature if not required by the AHJ.*
        ii. *The sliding motor-operated vehicle gate with access control. Site designer to confirm type of security access (key pad, card reader, etc) with user. Coordinate fire department access requirements with the Base Fire Marshall.*
    b. *The striped area in front of Vehicle Processing Building entrance is intended to provide maneuvering room for tow trucks delivering vehicles for processing.*
    c. *The location of outdoor mechanical/electrical equipment, including transformer and future mobile generator may only be adjusted in consultation with the CIDC proponent and the USACE CoS District and upon written consent of both. These items must remain within the CIDC secured area.*
    d. *The fence around this area is to be 8 feet high with no barbed wire on top.*
    e. *There are two sizes of parking spaces in the secured parking area: government sedan (9'x18') and HUMVEE (12'x18'). The designer is to design for the number of each vehicle type, developed in collaboration with the user.*

3. *Vehicle Processing Building*
    a. *Note the vehicle lift. The designer should consider this when pursuing a geotechnical investigation of the site.*

4. *Weapons Clearing Barrel*
    a. *Two weapons clearing barrels shall be located on site. One shall be located at the entrance to the building from the secure government vehicle area. The other shall be located at the entrance to the building from the Staff parking area. Confirm the exact location at each entrance with the user.*

5. *ATFP*
    a. *The building is currently classified as "Inhabited" for Stand-off distance determination in accordance with the definitions provided in UFC 4-010-01 dated 9 February 2012. These plans are based on the prototype. The designer is responsible for confirming building classification based on current version of UFC 4-010-01.*

2.1.2 Site Lighting

The backlight and glare ratings of building-mounted luminaires and all other luminaires shall comply with ASHRAE 189.1-2009, Table 5.3.3.2B and Table 5.3.3.2A, respectively.

All exterior lighting shall comply with either the maximum uplight ratings of Table 5.3.3.2A or the uplight requirements of Table 5.3.3.3, both of which are found in ASHRAE 189.1-2009.

All exterior lighting shall be designed to provide protection of the Indiana Bat, in compliance with State of New York regulations.

Site lighting sources shall be fluorescent and metal halide with good color rendition. Outdoor lighting levels are accordance with the Illuminating Engineering Society of North America (IESNA) Lighting Handbook illumination levels.

Site lighting shall be controlled by photocells, motion sensors, and timers for energy conservation. Coordinate the exterior lighting design and controls with the Base (Installation). Exterior lighting for the Main Entrance and lighting of the building identification sign shall be on at night. Other exterior lighting shall be controlled by motion sensors.

2.2 STRUCTURAL ENGINEERING

2.2.1 General

CIDC RA 10-15 is a one-story steel framed structure with a spread footing foundation. The building is located at the Army base in Fort Drum, New York, 44.04°N 75.76°W.

The footprint of the building is rectangular in shape and measures approximately 63 ft by 160 ft. The building walls, both interior and exterior, are non-load resisting elements except for wind cladding or designed lateral pressure.

2.2.2 Framing System

The building is a steel framed structure with hollow structural section (HSS) steel columns and wide flange steel beams at the eave elevation. Triangular cold formed steel trusses shall form the gabled roof profile and the dormers.

Braced frames provide lateral load resistance and columns are designed with fully pinned fixity at the base.

A steel frame structural system is selected for the CIDC prototype buildings as it is the most common type of structural system throughout the United States, and common in many parts of the world. Alternative structural systems include cast-in-place reinforced concrete and load bearing masonry. While these systems are used in some geographic areas, they are not common in all areas where a prototype building may be constructed.

A steel frame system has the advantage of allowing relatively flexible interior planning. A steel frame system is also a good structural system for areas subject to hurricanes, such as Fort Stewart, Georgia. A steel frame system is also an efficient system in high seismic regions. A load bearing masonry system is too heavy for use in high seismic areas.

The typical roof form of the prototype buildings is a hip or gable roof form with a slope of 4:12 to 6:12. This roof form is commonly and efficiently constructed with prefabricated light gauge steel trusses.

A precast concrete structural system is not considered a good choice for the prototype, since the CIDC buildings are relatively small (the largest is approximately 16,000 square feet). In addition, the cost effectiveness of this type of system is extremely dependent on the proximity of the site to a precast concrete plant.

Another advantage of a steel frame system is that steel is a commonly recycled product. It is likely that a new CIDC building built with a steel frame would have a high content of recycled material. The American Institute of Steel Construction estimates that structural steel beams and columns produced at U.S. mills has a recycled content above 80%. In addition, when the building is dismantled in the future, 50 or more years from now, the steel structural components can be easily recycled (or reused). Masonry and concrete structures do not have the same environmental advantages.

The Vehicle Processing prototype buildings utilize a load bearing masonry wall as the main structural system, and prefabricated light gauge steel trusses for the roof. This system is selected as the building is small, and the required interior finish is painted concrete block. This is a durable interior finish; if the building were framed in steel providing a durable interior finish would be expensive. The most likely choice would be cement plaster applied to a cement board base installed on steel studs.

2.2.3 Foundation

Gravity load and lateral load are delivered to the columns that are supported by the concrete footings. Typically the top of footing shall be 7 ft below finished floor for exterior footings and 1.5 ft below finished floor for interior footings. The design frost line is 94 inches below soil cover. Special measures to prevent frost heave and water freezing below the building or adjacent to the building under walks should be expected.

For gravity loads (Dead and Live Loads), strip and column footings supported on undisturbed native soil stratum or structural fill with proper compaction can be designed for net allowable soil bearing capacities of 2,000 pounds per square foot (psf) for service loads. Allowable soil bearing capacities for transient loads (Wind and Seismic Loads) are permitted to increase by 30% to approximately 2,700 psf.

The ground level slab-on-grade shall be designed to meet the load requirements. The floor slab shall be designed as “floating”, ground supported and without rigid connections to columns and perimeter walls. Contraction joints are provided to control shrinkage crack pattern. Although the slab is designed as unreinforced slab, 0.1% of steel reinforcement is provided by either wire mesh or rebar. Vapor barrier shall be provided under the concrete slab.

Final foundation design shall be confirmed based on the findings of the geotechnical report.

2.2.4 Special Features

For this project, with the frost depth as deep as it is, the foundations are dropped to a considerable depth with a grade beam around the perimeter of the building. Additionally, the geotechnical engineer should address frost mitigation measures in his geotechnical report to prevent heave around the perimeter or frost heave disrupting the transition at entrances to the facility. Any estimate of the cost for this facility should include an allowance for frost mitigation measures during the placement of the foundation.

2.2.5 Force Protection System

The building envelope shall meet the ATFP criteria governed by section B.3 of UFC 4-010-01. Glazed openings on the exterior walls shall be designed for blast pressure. Since the building is within a controlled perimeter and has a standoff distance of 82 feet the structural frames for the glazed openings shall therefore be designed for type II explosive. The design criterion shall be “low level of protection”.

2.2.6 Fire Resistance

A Fire Rating of 0.0 hours has been assigned to column and roof elements. (Also see section 2.6 Fire Protection)

2.2.7 Design Criteria

This building satisfies the design specifications of IBC 2006 and ASCE-7.

2.2.8 Load Assumption

2.2.8.1 Dead Load

Actual calculated weight of permanent construction per SEI / ASCE-7.

2.2.8.2 Live Load

Minimum live load allowances are determined per IBC and parameters provided by USACE NAO.

2.2.8.3 Snow and Roof Live Load

Design Ground snow load is 70 psf. The roof live load of 20 psf shall not control over the Flat Roof Snow Load of 58.8 psf. The effects of snow drift and unbalanced snow load are not considered due to the geometry of the roof.

2.2.8.4 Wind Load

Basic wind speed shall be 90 mph, based on a 3-second gust, and Importance factor 1.00, Exposure Category “C”. Buildings are designed as enclosed structures.

2.2.8.5 Seismic Load

According to the calculation from USGS, S_s=30.00%g and S_1=8.00%g for this site. This yields a Seismic Design Category B.

Site Class D has been chosen at this time. Seismic loading shall be confirmed using the findings of the geotechnical report.

2.2.9 Material Properties

2.2.9.1 Concrete Strength

Footings	f'c = 4,000 psi
Foundation walls and pedestals	f'c = 4,000 psi
Ground floor slab	f'c = 4,000 psi
All concrete not otherwise specified	f'c = 4,000 psi

2.2.9.2 Reinforcing Bars

ASTM A 615 Grade 60, Deformed	fy = 60 KSI

2.2.9.3 Masonry

Design masonry assemblage strength	f'm = 1,500 PSI

2.2.9.4 Steel

Wide flange shapes - ASTM A 992	fy = 50 KSI
Tube shapes - ASTM A 500 Grade B	fy = 46 KSI
All other structural steel - ASTM A 36	fy = 36 KSI
Welding electrodes - AWS D1.1	E70XX

2.2.10 Structural Calculations

Structural calculations are contained in Appendix C.

2.3 ARCHITECTURE

2.3.1 General

The design shall be in accordance with the current version of the Unified Facilities Criteria UFC 1-200-01 Design: General Building Requirements and other applicable criteria, codes and standards.

2.3.2 Goals and Objectives

Overall architectural goals for the facility are to provide a functional, visually appealing facility that is a source of pride for facility users, and the installation, and which meets the functional requirements of the CIDC mission. The RA 10-15 buildings are designed and shall be constructed to be:

- compatible with the surrounding Fort Drum architecture
- technically sound building components and systems
- a safe and healthy work environment
- durable and easily maintained over a 50 year projected life
- suitable for the Watertown, NY climate, including extremely low winter temperatures, high wind speed, and high snow falls

2.3.3 Exterior Design

The exterior materials, roof forms, and detailing are based on the approved Installation Design Guide and are compatible with the local context and climate. The finish colors match the standards applied to the other buildings in the South Post district.

The exterior materials, finishes, and roof form of the Vehicle Processing Building shall generally match the materials, finishes, and roof form of the main CIDC building.

2.3.4 Entrances

Building entrances are readily identifiable. Entry materials include standing seam metal roofing, brick, and split-faced concrete block. Entrances shall be accessible. Secondary entrances are provided with a canopy roof for protection from adverse weather.

2.3.5 Exterior Windows and Doors

Windows shall comply with the requirements of UFC 4-010-01 Design: Minimum Antiterrorism Standards for Buildings. Exterior shading is provided by a wide roof overhang. Glazing shall contain special coatings (i.e. Low-E) to meet the energy performance requirements defined in section 2.5. Reflective glass coatings shall not be used.

2.3.6 Exterior Façade

The exterior envelope shall consist of masonry, including a split-faced concrete block base course, precast concrete accent band, and brick masonry above the band. A durable exterior insulation and

finish system is used for the large gable dormer. Cold-formed steel studs and sheathing provide the 'back-up' to the masonry wall.

2.3.7 Roofing

The proposed roof system is an architectural standing seam metal roof with a 4:12 slope. The standing seam roof panels are installed over ventilated roof sheathing. Ridge and soffit vents, and the ventilated sheathing, provide a 'Cold Roof' which is appropriate to the climate, and commonly used at Fort Drum.

The gable roof form is similar to the roof form of local buildings and is effective for the 'Cold Roof' design. A hip roof with ventilated sheathing does not vent well at the hips. Fascia panels and ridge vents are fabricated from the same material as the roof. Gutters are not commonly used at Fort Drum, due to ice and snow.

The two dormers on the main building roof serve to protect window and door areas from snow sliding off of the roof.

The cold roof design shall be utilized for both the main CIDC Building and the Vehicle Processing Building.

2.3.8 Architectural Louvers

Painted aluminum louvers with insect screens shall be used for outdoor supply air and exhaust/relief air. The louvers are designed and shall be located to comply with UFC 4-010-01.

2.3.9 Interior Volume

The common ceiling height throughout the facility is 9 feet above the finished floor (AFF). Larger spaces have higher ceilings; 10 feet or 10 feet 8 inches AFF.

The Vehicle Processing Building ceiling height is set at approximately 16 feet. This allows for a HumVee to be lifted to a height of 64 inches, using a mobile lift. Clearance above the vehicle is approximately 4 feet. All mechanical and electrical systems in the Vehicle Processing shall be installed below the finished ceiling.

2.3.10 Interior Doors and Frames

Painted hollow metal frames and stained solid core wood doors shall be provided in most areas. Hollow metal doors shall be provided at service areas. Double doors are provided when convenient for moving equipment.

2.3.11 Door Hardware

A card access system is used to control access to, and within, the building. Security locks are required for Arms Vault, and the Evidence Processing, Evidence Custodian and Evidence Depository Rooms.

2.3.12 Arms Vault

The Arms Vault shall be constructed from modular reinforced concrete panels. The Arms Vault shall include a day gate.

2.3.13 Vehicle Lift

A mobile column hydraulic vehicle lift shall be installed in the Vehicle Processing Building. Coordinate the capacity of lift with the largest vehicle anticipated by user to be processed.

The ceiling height in the Vehicle Processing Building is approximately 16 feet.

2.3.14 Acoustical Design

The acoustical design of the facility is important considering the sensitive nature of many conversations within the building. These requirements are based on ANSI/ASHRAE Standard 189.1 and the text Architectural Interior Systems, by Flynn, Kremers, Segil, and Steffy.

To provide for sound privacy between spaces, partition and ceiling construction shall be constructed to meet these specific Sound Transmission Class (STC) ratings.

Administrative Offices	STC 40
Conference and Interview Rooms	STC 45
Polygraph Room	STC 50
SIPRNET	STC 50
Mechanical Room	STC 50
Conference Rooms	
when adjacent to Restrooms	STC 53
Conference Rooms	
when adjacent to Mechanical Room	STC 60

Background noise levels are controlled through the selection and placement of equipment and through a variety of other design techniques. An acceptable background noise level (defined by Noise Criteria Curve or NC) shall be provided based on the following criteria:

Conference Rooms	NC 30
Private Administrative Offices	NC 30
Polygraph Exam Room	NC 30
Open Administrative Offices	NC 35
Interview Rooms	NC 35

The Polygraph Exam Room shall be designed in accordance with Department of the Army Polygraph Regulation AR 195-6.

2.4 COMPREHENSIVE INTERIOR DESIGN (CID)

2.4.1 General

Comprehensive Interior Design (CID) for the project includes Structural Interior Design (SID) and Furniture, Fixtures and Equipment (FF&E). The SID and FF&E are outlined in this Design Analysis.

There are two separate functions in the RA 10-15 facility. The *front* of the facility shall be for visitors, CIDC agents, and administrative staff; the *front* of the facility also includes support areas including Restrooms, Showers, and a Multipurpose Lounge. The *back* of the facility shall be for suspects (Waiting, Interview Rooms, and polygraph areas), Evidence (Collection, Processing, and Storage) and other support areas (Vault, Equipment Storage). The *front* of the facility shall be identified as the administrative area and the *back* of the facility shall be identified as the suspect area.

2.4.2 Structural Interior Design (SID)

Design goals for the finish materials used for ceilings, walls and floors include the following:

- aesthetically pleasing and functional finishes
- durability and ease of maintenance
- recycled and sustainable materials
- neutral or medium toned interior colors

2.4.3 Interior Environmental Quality

All adhesives and sealants used on the interior of the building, including those used for HVAC systems, shall comply with ASHRAE 189.1 Section 8.4.2.1.1 or 8.4.2.1.2 .

Paints and coatings used on the interior of the building shall comply with ASHRAE 189.1 Section 8.4.2.2.1 or 8.4.2.2.2.

Floor covering materials installed in the building interior shall comply with

- Carpet: Carpet shall be tested in accordance with and shown to be compliant with the requirements of CA/DHS/EHLB/R-174 (commonly referred to as California Section 01350). Products that have been verified and labeled to be in compliance with Section 9 of the CA/DHS/EHLB/R-174 comply with this requirement.
- Hard surface flooring in office spaces: Materials shall be tested in accordance with and shown to be compliant with the requirements of CA/DHS/EHLB/R-174 (commonly referred to as California Section 01350).

All office furniture systems and seating installed prior to occupancy shall be tested according to ANSI/BIFMA Standard M7.1 and shall not exceed the limit requirements listed in Normative Appendix E of this standard.

Ceiling and wall system emissions shall be limited. These systems include ceiling and wall insulation, acoustical ceiling panels, tackable wall panels, gypsum wall board and panels, and wall coverings. Emissions for these products shall be determined according to CA/DHS/EHLB/R-174 (commonly referred to as California Section 01350) and shall comply with the limit requirements for either office or classroom spaces.

2.4.4 Interior Wall and Ceiling Finishes

Wall finishes, floor finishes, and ceiling finishes shall conform to the requirements of NFPA 101, U.S. Army Corps of Engineers CIDC Design Guide, Unified Facilities Criteria 3.120.10 Interior Design with change 1, and Unified Facilities Criteria 3-600-01 Design: Fire Protection Engineering for Facilities.

Opaque interior surfaces in daylight zones shall have visible light reflectance greater than or equal to 80% for ceilings and 70% for partitions higher than 56 inches (1.54 meters) in daylight zones, when ASHRAE 189.1 Prescriptive Option 8.4 is chosen.

2.4.5 Ceilings

Acoustical ceiling tiles shall be 2 foot square tiles with a minimum recycled content of 60%. Square edge tiles are provided throughout the facility. The ceiling grid shall be a 15/16" wide metal, nonferrous, intermediate-duty system for lay-in acoustical panels. The finish of grid shall be a factory-applied *white* paint finish.

Moisture resistant gypsum board shall be used for ceilings in the Restrooms, Showers, and Vestibules.

Impact resistant gypsum board is used for the ceilings of suspect area, including Suspect Waiting and the Suspect Toilet Room. Impact resistant gypsum board is used for the ceiling of the Vehicle Processing Building.

The exposed gypsum board ceilings and exposed structure shall be painted with interior oil based semi-gloss enamel.

2.4.6 Walls

Gypsum drywall, with a minimum recycled content of 60%, shall be the common interior wall material. Impact-resistant gypsum wall board shall be used from floor level to a height of 4 feet in Corridors, Suspect Waiting Areas, Storage Rooms, and Visitor Waiting areas. Fire-rated (type X) gypsum drywall shall be used for fire-rated walls. Cement board shall be used for shower walls.

Interior wall finishes shall be moisture and mildew resistant paint. Gypsum board surfaces shall be finished with a latex primer and two coats of eggshell finish of premium quality professional paint.

Concrete block walls shall receive a finish of one-coat of latex block-filler followed by one-coat of alkyd wall primer/sealer and one finish coat of oil based semi-gloss enamel paint.

Ceramic wall tile is used in toilet/shower areas in the administrative and suspect areas. Although no specific size is stated, where quarry, porcelain and ceramic is required in a design standard, it is

preferred to use larger tiles, such as 8x8 or 12x12 to minimize the grout joints; use when acceptable by the use of the space within the facility. Tile shall be through-color. Colored grout with sealer shall be used. Ceramic tile wainscot shall extend 60 inches above the finished floor (AFF).

Corner Guards shall be provided at outside corners at right angles. Corner guards shall be through-color polycarbonate or rubber.

Chair rail is used in the corridors throughout the administrative areas of the facility. Chair rails shall be solid hardwood, AWI custom grade with molded shaped profile.

2.4.7 Flooring

Carpet tile shall be used throughout the administrative areas of the facility which includes Visitor Waiting, administrative areas, Offices, Corridors, Conference Rooms, and Large Interview Rooms. Carpet tile shall have minimum density of 6600 and 26 oz weight with a severe wear rating; carpet tile shall be tufted cut and loop pile multi colored and patterned 100% solution dyed premium branded nylon with high performance backing. Straight rubber base is used with the carpet tile.

Carpet static control shall be provided to permanently control static buildup to less than 3.5 kv when tested at 20% relative humidity and 70 degrees F in accordance with AA TCC 134. The Telecomm Room shall be finished with non-static resilient flooring.

Ceramic floor tile shall be used in toilet and shower areas in the administrative area of the facility. The tile shall be a minimum of 12” x 12” through-color and slip resistant. Colored grout with sealer shall be used. Tile base and other pre-manufactured trim pieces shall be used.

Resilient tile flooring shall be used in the Multipurpose Room, Evidence Processing, Evidence Custodian, Evidence Depository, Photo ID and Corridors in the suspect areas of the facility, and in the Small Interview Rooms. Resilient vinyl bio-based composition tile (VCT) shall be through-color commercial grade. A rubber cove base shall be used with VCT.

Thresholds of nonferrous materials shall be used where there is a transition of flooring materials. Stone thresholds shall be used where ceramic floor tile adjoins another floor material.

Concrete floors shall be exposed in the Mechanical, Electrical, Arms Vault, and Telecomm Rooms. These floors shall receive a finish of two coats of clear hardener/sealer.

Concrete floors shall be exposed in the Suspect Waiting, Suspect Toilet, TOE, and Vehicle Processing Building. These floors shall have a colored *slip-resistant* epoxy finish.

2.4.8 Furniture, Fixtures & Equipment

2.4.8.1 Fixed Furnishings

All building entrances employ an entry mat system consisting of a scraper surface, an absorption surface, and a finishing surface. Window treatments shall be provided on every exterior window and at any interior view window where privacy is required. Window treatments are not provided in suspect

areas. Blinds shall be one-inch wide horizontal room-darkening commercial grade aluminum blinds with hardware and controls.

FF&E procurement shall be through activity, construction contract, or procuring agency as stated in the project contract/ requirements.

Signage Assemblies consist of three primary elements; a structural rail, removable copy inserts and a wall mounted frame with trim. The signage rails shall be designed to hold injection molded plastic insert strips with integral color and tactile letters, symbols and Grade II Braille, to comply with ADA requirements. The rails and copy insert strips shall be snapped into a molded plastic frame which is secured to the wall surface. There shall be three types of signage: Identification, directional and ADA required.

Dry erase marker board shall be provided for Multipurpose Room.

Shower area lockers shall be fabricated from solid polymer materials and stacked two high.

Architectural woodwork shall be provided in the Multipurpose Room and Photo ID area. All architectural woodwork shall be Architectural Woodwork Institute (AWI) custom grade; all exposed surfaces are clad with high pressure plastic laminate. Upper and lower cabinets shall be closed; countertops and splashes shall be made of solid surface materials.

2.4.8.2 Movable Furnishings

Develop design for FF&E in accordance with activity requirements with all movable furnishings required to produce an optimum functional facility. The design of FF&E package is to include the purchase and installation of collateral equipment. Those items which are considered movable include:

Wood Casegoods

Metal Furniture and Laminate-clad Furniture

Storage and Filing

Task Seating

Lounge Seating, Waiting Area Seating and Guest Seating

Interview Room and Conference Room tables

Waste Receptacles and Recycling Containers

Wall-mounted Clocks, Literature Racks

Small Appliances - Refrigerator and icemaker, microwave oven, commercial coffee makers shall be *ENERGY STAR* Equipment

Flat screen TV and ceiling mounted projector*s* shall be *ENERGY STAR* Equipment

2.5 SUSTAINABLE DESIGN

2.5.1 Design Criteria

CIDC facilities shall be designed and constructed in accordance with the following Department of Defense policies and directives on energy and resource conservation:

- Army Energy Security Implementation Strategy of 2009
- Department of the Army Memorandum: Sustainable Design and Development Policy Update (Environmental and Energy Performance) October 27, 2010
- ECB 2010-14 and ECB 2011-1
- Energy Independence and Security Act (EISA) of 2007
- Energy Policy Act (EPACT) of 2005
- Executive Order (EO) 13423 Strengthening Federal Environmental, Energy, and Transportation Management, 2007
- Executive Order (EO) 13514 – Federal Leadership in Environmental, Energy and Economic Performance, 2009
- Federal Leadership in High Performance and Sustainable Buildings, Memorandum of Understanding (HPSBGP/MOU), 2006
- UFC 3-400-01 Energy Conservation (with 2008 revisions)
- USACE Army LEED Implementation Guide

The RA 10-15 facility at Fort Drum is designed and shall be constructed as a High-Performance Green Building. The sustainable design approach for this facility is based on meeting two standards; compliance with ASHRAE Standard 189.1 and LEED Silver Certification. The ASHRAE Standard 189.1 is similar to the LEED-NC v3.0 rating system, but includes more mandatory provisions.

2.5.2 ANSI/ASHRAE/USGBC/IES Standard 189.1 Standard for the Design of High-Performance Green Buildings

The project shall be designed to comply with ANSI/ASHRAE Standard 189.1.

2.5.2.1 Sustainable Sites

The site for the building project shall comply with the site selection criteria set by ASHRAE 189.1-2009, 5.3.1 *Site Selection*.

The site hardscapes shall comply with heat island effect mitigation criteria set by ASHRAE 189.1-2009, 5.3.2.1 *Site Hardscape*.

The backlight and glare ratings of building-mounted luminaires and all other luminaires shall comply with ASHRAE 189.1-2009, Table 5.3.3.2B and Table 5.3.3.2A, respectively.

All exterior lighting shall comply with either the maximum uplight ratings of Table 5.3.3.2A or the uplight requirements of Table 5.3.3.3, both of which are found in ASHRAE 189.1-2009.

2.5.2.2 Water Use Efficiency

2.5.2.2.1 Site Water Use Reduction

A minimum of 60% of the area of the improved landscape is bio-diverse planting of native plants and adapted plants other than turf grass.

A maximum of one-third of the improved landscape is irrigated by potable water.

Irrigation systems are controlled by either a qualifying smart controller that uses evapotranspiration (ET) and weather data to adjust irrigation schedules and complies with the minimum requirements or an on-site rain or moisture sensor that automatically shuts the system off after a predetermined amount of rainfall or sensed moisture in the soil.

Qualifying smart controllers meet the following minimum requirements:

Irrigation adequacy – 80% minimum ET of the plant material

Irrigation excess – not to exceed 10% when tested in accordance with IA SWAT Climatological Based Controllers 8th Draft Testing Protocol

2.5.2.2.2 Building Water Use Reduction

Plumbing fixtures and fittings comply with the flush and flow rates requirements established in ASHRAE 189.1-2009, 6.3.2.1 *Plumbing Fixtures and Fittings*.

Additional water use requirements are noted in ASHRAE 189.1, 6.3.2.3 HVAC Systems and Equipment and ASHRAE 189.1, 6.4.2.1 Cooling Towers.

Measurement devices with remote communication capability are provided to collect water use data for each of the building subsystems; potable water and harvested rain water.

All building measuring devices, monitoring systems, and sub-meters are configured to the data management system. The meter provides, at minimum, daily data and records hourly water consumption. The meter data management system is capable of electronically storing water meter, monitoring systems, and sub-meter data and creating user reports showing calculated hourly, daily, monthly, and annual water consumption of each measurement device and sub-meter. The meter data management system also provides alarm notification as needed to support requirements set by the Water Use Efficiency Plan for Operation (ASHRAE 189.1-2009, 10.3.2.1.2 *Water Use Efficiency*).

2.5.2.3 Energy Efficiency

To satisfy energy efficiency requirements, the prescriptive path listed in ASHRAE Standards 189.1-2009 and 90.1-2007 is being followed. Building envelope insulation requirements are being increased. A solar hot water heating system shall be used as an on-site renewable energy source. To provide "free" cooling in the building a waterside economizer shall be used.

2.5.2.3.1 Climate Zone and Weather Data

Fort Drum is located in Climate Zone 6-A COOL-WET.

Outdoor design temperatures are derived from ASHRAE 90.1-2007:

99.6% Heating Design Temp	Minus 12 degrees F
1% DB Cooling Design Temp	83 degrees F
1% WB Cooling Design Temp	70 degrees F

The full-year weather data used for energy modeling is from the DOE-2 TMY-3 database, for Watertown, NY.

2.5.2.3.2 Interior Space Temperatures

Interior design temperatures are 70 degrees F for heating and 75 degrees F for cooling. Temperature drift points are 55 degrees F and 80 degrees F.

2.5.2.3.3 Power or Plug Loads

Plug loads are assumed to be 0.75 watts per square foot, for energy analysis and modeling.

2.5.2.3.4 Electrical Power

ASHRAE 189, 7.4.5.1: The project shall contain automatic systems, such as demand limiting or load shifting, that are capable of reducing electric peak demand of the building by not less than 10% of the projected peak demand.

Feeder conductors shall be sized for a maximum voltage drop of 2% at design load.

Branch circuit conductors shall be sized for a maximum voltage drop of 3% at design load.

2.5.2.3.5 Lighting

The installed interior lighting power includes all power used by the luminaires, including lamps, ballasts, transformers, and control devices. Luminaires that are not included in the calculation are as follows: exit signs and furniture-mounted supplemental task lighting that is controlled by an automatic shut-off switch.

The luminaire wattage incorporated into the installed interior lighting is determined by the operating input wattage of the maximum lamp/auxiliary combination based on values from the auxiliary manufacturers' literature (for luminaires with permanently installed ballasts).

The interior lighting power allowance for the building is 90% of the value determined by using the "Space by Space Method" as described in ASHRAE 90.1 Section 9.5.

The interior lighting is controlled by occupancy sensors that turn lighting off within 30 minutes of an occupant leaving a space. These automatic control devices are implemented such that lighting can be shut off in all spaces via "automatic OFF" controls. The occupancy sensors allow "manual OFF" control. In addition, all occupancy sensors allow bi-level "automatic ON" programmed to a low light level combined with multi-level circuitry and "manual ON" switching for higher light levels. Exceptions to the control strategy include the Mechanical, Electrical, and Telecomm Rooms, where the automatic shutoff of lighting could endanger the safety of building occupants.

Corridors, as a means of egress, do not exceed the 0.1 W per square foot limit, as defined by ASHRAE 189.1-2009.

The following spaces include controls that automatically reduce lighting power in response to available daylight by a combination of stepped switching and daylight-sensing automatic controls (capable of incrementally reducing the light level in steps automatically and turning the lights off automatically): Large Interview Room, Drug Suppression Team Room, and Admin/OPS Room.

Each space enclosed by ceiling-height partitions shall have a control device that independently controls the general lighting in the space. The location of the manual control device serving each space shall be easily accessible.

Internally illuminated exit signs shall not exceed 5W per face.

Exterior lighting is controlled by a combination of a photo sensors, motion sensors, and a time switch. All time switches are capable of retaining programming and the time setting during loss of power for a period of at least ten hours. Relay shall step down the total lighting power by 50% one hour after normal business closing and turn off outdoor lighting within 30 minutes after sunrise. The photosensors are interconnected with the relay.

Luminaires mentioned in the previous paragraph with power consumption greater than 100W contain lamps with a minimum efficacy of 60 lumens per watt.

2.5.2.3.6 Building Orientation

Preliminary energy studies of the RA 10-15 building indicate that the estimated annual energy consumption is not significantly affected by changes in the building orientation. This is a result of the relatively low solar heat gain through the vertical fenestration, due to shading from the roof overhang and the limited area of glazing.

2.5.2.3.7 Thermal Envelope

The building thermal envelope meets the minimum required R-values of insulation in framing cavities and for continuous insulation (c.i.) only.

The building envelope is designed and constructed with a continuous air barrier. All air barrier components of each envelope assembly shall be clearly identified on Construction Documents and the joints, interconnections, and penetrations of the air barrier components shall be detailed.

Opaque Element	Min. R-Value/Max. U-Value	Proposed R-Value
Roof – Attic and Other	R-49	R-60
Walls, Above-Grade – Steel-Framed	R-13 + R-5.0 c.i.	R-12 + R-10 c.i.
Slab-On-Grade Floors – Unheated	F-0.730, Ins NR	R-15 for 24 inches
Opaque Doors – Swinging	U-0.60	U-0.40

The building exterior wall assembly, roof assembly, and fenestration have specific composite STC or OITC rating requirements dependent on building location in proximity to specific noise profiles. See ASHRAE 189.1-2009, Section 8.3.3.1 for this criteria.

2.5.2.3.8 Fenestration

The vertical fenestration area is 10% which does not exceed the limit of 40% of the gross wall area. No skylights are included in the RA 10-15 facility design.

See ASHRAE 189.1-2009, 7.4.2.9 *Fenestration Orientation* for fenestration area versus SHGC compliance for climate zone 3.

See ASHRAE 90.1-2007, 5.8 *Product Information and Installation Requirements* for insulation and fenestration labeling and testing requirements.

Fenestration Element	Max. U-Value/SHGC	Proposed U-Value/SHGC
Vertical Glazing – Nonmetal framing	U-0.25, SHGC-0.40	U-0.25, SHGC-0.40
Vertical Glazing – Metal	U-0.25, SHGC-0.40	U-0.25, SHGC-0.40

framing (entrance door)		

2.5.2.3.9 Infiltration

The following areas of the building envelope shall be sealed to minimize air leakage:

- Joints around fenestration and door frames
- Junctions between walls and foundations, between walls at building corners, between walls and structural floors or roofs, and between walls and roof or wall panels
- Openings at penetrations of utility services through roofs, walls, and floors
- Joints, seams, and penetrations of vapor retarders
- All other openings in the building envelope

Air leakage for fenestration and doors shall be determined in accordance with NFRC 400. Air leakage shall be determined by a laboratory accredited by a nationally recognized accreditation organization and shall be labeled and certified by the manufacturer. Air leakage shall not exceed 1.0 CFM per square foot for glazed swinging entrance doors. For roll-up doors, air leakage determined by test at standard test conditions in accordance with ANSI/DASMA 105 shall be an acceptable alternate for compliance with air leakage requirements.

Building entrances that separate conditioned space from the exterior are protected with an enclosed vestibule, with all doors opening into and out of the vestibule equipped with self-closing devices. The interior and exterior doors meet the requirement for a minimum distance of 7 feet between the two when in the closed position.

2.5.2.3.10 Roof Materials

The standing seam metal roof shall have a Solar Reflectance Index (SRI) value of 30, which satisfies the minimum initial SRI of 29 for a *steep-sloped* roof. The SRI is to be calculated in accordance with ASTM E1980 for medium-speed wind conditions. The SRI is to be based upon solar reflectance as measured in accordance with ASTM E1918 or ASTM C1549, and thermal emittance as measured in accordance with ASTM E408 or ASTM C1371. For roofing products, the values for solar reflectance and thermal emittance shall be determined by a laboratory accredited by a nationally recognized accreditation organization, and shall be certified by the manufacturer.

2.5.2.3.11 Building Equipment

Measurement devices (smart meters) with remote communication capabilities are provided to collect energy consumption data for building electrical loads (consumption and demand), natural gas consumption, and on-site renewable thermal energy. These meters shall automatically communicate with a data acquisition system, and provide daily and hourly energy data. The data acquisition system

shall be capable of storing data for a minimum of 36 months and creating user reports showing hourly, daily, monthly, and annual energy consumption.

HVAC equipment efficiencies shall comply with ASHRAE 189, 7.4.3.1.

Fan system power limitations are noted in ASHRAE 189.1, 6.5.3.

Domestic hot water equipment efficiencies are listed in ASHRAE 189, Table C-12.

Electric motors comply with the requirements of the Energy Policy Act where applicable, as shown in ASHRAE 189.1-2009, Table C-13. Motors not included in the scope of the Energy Policy Act of 1992 have no performance requirements in ASHRAE 90.1-2007, Section 10 *Other Equipment*.

See ASHRAE 189.1-2009, 7.4.7.3 *ENERGY STAR Equipment* for equipment requirements within the scope of applicable ENERGY STAR program.

2.5.2.3.12 Control Strategies - HVAC

The cooling system is designed to distribute cooling at the zone level, therefore, the thermostatic controls for the equipment conveying cool air is set at the zone level. The heating system is controlled at the room level.

Automatic shutdown, temperature setback control and optimum start time control shall be provided by the Energy Management and Control System (EMCS).

Ventilation outdoor air dampers automatically shut during preoccupancy building warm-up, cool down, and setback, except when ventilation reduces energy costs (e.g. night purge).

All HVAC equipment shall be monitored and/or controlled through the energy management and control system.

2.5.2.3.13 Control Strategies - Service Hot Water

Temperature controls are provided that allow for storage temperature adjustment from 120°F or lower to a maximum temperature compatible with the intended use.

The recirculation pump for the hot water system is equipped with an automatic time switch set to switch off the water heaters when the facility is unoccupied.

Temperature control means are provided to limit the maximum temperature of water delivered from lavatory faucets in the restrooms to 110 degrees F.

2.5.2.4 Renewable Energy

The RA 10-15 building shall include an on-site renewable energy system. An on-site wind generation system and a solar water heating system shall be evaluated. The system annual output shall meet the minimum requirement of 6.0 KBtu per square foot.

2.5.3 LEED (Leadership in Energy and Environmental Design)

The RA 10-15 facility is designed to achieve LEED Silver Certification under the USGBC 2009 rating system. The Vehicle Processing Building does not meet LEED minimum program requirements, so it cannot be certified. However, the building shall be designed with a sustainable approach similar to the main building.

As presented on the LEED scorecard included at the end of this section there are 79 points which may be achievable. For Silver Certification, a minimum of 50 points are required; an additional 10 points are included (a 20% contingency) in the 'Y' column of the checklist since the project is currently at the concept design level.

The LEED credits which are being pursued include the following key items:

SS C4.2: Alternative Transportation – Bicycle Storage and Changing Room

Bicycle racks shall be located within 200 yards of building entrance with storage for 5% of building users and shower and changing facilities for 0.5% of full time equivalent occupants.

SS C4.4: Alternative Transportation – Parking Capacity

This project shall utilize Option 1 – non-residential with new parking; preferred parking for carpools or vanpools for 5% of the total provided parking spaces.

SS C5.2: Site Development – Maximize Open Space

This project is for a military base, therefore there are no local zoning requirements in place. Option 2 shall be used in order to promote biodiversity by providing a high ratio of open space to development footprint.

SS C6.1: Stormwater Design – Quantity Control

Reduce the quantity of natural hydrology by reducing impervious cover, increasing on-site infiltration, reducing or eliminating pollution from storm water runoff and eliminating contaminants.

SS C6.2: Stormwater Design – Quality Control

The project shall include a storm water management plan to control the quality of storm water.

SS C7.1: Heat Island Effect – Non-roof

To minimize the heat island effect 50% of the site hardscape shall be shaded or have an SRI value of 29 or greater.

SS C8: Light Pollution Reduction

Project shall reduce input power, by automatic device, for interior lighting. The project shall minimize light trespass from the building and site, reduce sky-glow, improve nighttime visibility and reduce development impact from lighting on nocturnal environments.

WE C1: Water Efficient Landscaping

Landscaping is designed to reduce the use of potable water for irrigation

WE C3: Water Use Reduction

Water conserving fixtures are used to reduce potable water use for building sewage conveyance by 50%.

EA C1: Optimize Energy Performance

To evaluate building energy performance a full year energy model shall be used.

EA C2: On-site Renewable Energy

Solar collectors and a hot water storage system shall be used to provide on-site renewable energy.

EA C3: Enhanced Commissioning

Energy-related building systems shall be commissioned in accordance with LEED requirements for both Fundamental Commissioning and Enhanced Commissioning. Commissioning process activities shall be completed for the following energy-related systems:

Heating, ventilating, air conditioning, and refrigeration (HVAC) systems, both active and passive, and associated controls

Lighting and daylighting controls

Domestic hot water systems

Renewable energy systems

Building Envelope

LEED 2009 for New Construction and Major Renovations

Project Checklist

CIDC Det 10-15 - Fort Drum, NY

22-Jun

Sustainable Sites — Possible Points: 26

Y	?	N			
Y			Prereq 1	Construction Activity Pollution Prevention	
1			Credit 1	Site Selection	1
	1		Credit 2	Development Density and Community Connectivity	5
		1	Credit 3	Brownfield Redevelopment	1
	6		Credit 4.1	Alternative Transportation—Public Transportation Access	6
1			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
	3		Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
1			Credit 5.1	Site Development—Protect or Restore Habitat	1
1			Credit 5.2	Site Development—Maximize Open Space	1
1			Credit 6.1	Stormwater Design—Quantity Control	1
1			Credit 6.2	Stormwater Design—Quality Control	1
1			Credit 7.1	Heat Island Effect—Non-roof	1
			Credit 7.2	Heat Island Effect—Roof	1
1			Credit 8	Light Pollution Reduction	1

Water Efficiency — Possible Points: 10

Y			Prereq 1	Water Use Reduction—20% Reduction	
4			Credit 1	Water Efficient Landscaping	2 to 4
	2		Credit 2	Innovative Wastewater Technologies	2
2	2		Credit 3	Water Use Reduction	2 to 4

Energy and Atmosphere — Possible Points: 35

Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
9	5		Credit 1	Optimize Energy Performance	1 to 19
5			Credit 2	On-Site Renewable Energy	1 to 7
2			Credit 3	Enhanced Commissioning	2
2			Credit 4	Enhanced Refrigerant Management	2
3			Credit 5	Measurement and Verification	3
	2		Credit 6	Green Power	2

Materials and Resources — Possible Points: 14

Y			Prereq 1	Storage and Collection of Recyclables	
		3	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
2			Credit 2	Construction Waste Management	1 to 2
	2		Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	?	N			
2			Credit 4	Recycled Content	1 to 2
2			Credit 5	Regional Materials	1 to 2
1			Credit 6	Rapidly Renewable Materials	1
1			Credit 7	Certified Wood	1

Indoor Environmental Quality — Possible Points: 15

Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
1			Credit 1	Outdoor Air Delivery Monitoring	1
		1	Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
1			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
1			Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7.1	Thermal Comfort—Design	1
1			Credit 7.2	Thermal Comfort—Verification	1
		1	Credit 8.1	Daylight and Views—Daylight	1
		1	Credit 8.2	Daylight and Views—Views	1

Innovation and Design Process — Possible Points: 6

	1		Credit 1.1	Innovation in Design: Specific Title	1
	1		Credit 1.2	Innovation in Design: Specific Title	1
	1		Credit 1.3	Innovation in Design: Specific Title	1
		1	Credit 1.4	Innovation in Design: Specific Title	1
		1	Credit 1.5	Innovation in Design: Specific Title	1
1			Credit 2	LEED Accredited Professional	1

Regional Priority Credits — Possible Points: 4

1			Credit 1.1	Regional Priority:EA C2 (13602)	1
	1		Credit 1.2	Regional Priority: SS C2 (13602)	1
1			Credit 1.3	Regional Priority: SS C6.2 (13602)	1
			Credit 1.4	Regional Priority:	1

Total — Possible Points: 110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

2.6 FIRE PROTECTION

2.6.1 General

The fire protection design criteria for this facility include the current versions of the Unified Facilities Criteria 3-600-01 Fire Protection Engineering for Facilities, the International Building Code and the referenced National Fire Protection Association (NFPA) Codes and Standards.

A detailed Building Code analysis is provided on Drawing G-101. A number of assumptions were made in the completion of the Code Analysis. These assumptions include the following:

- The building shall be placed on a site with the minimum distances to the property lines (or assumed property lines) as indicated. In the event that the building is placed closer to a property line or another building than indicated in these documents, the exterior wall ratings shall need to be re-evaluated.
- An increase of 300% in allowable building area was included for automatic sprinkler protection. No allowable increase was taken for the increased access around the building.
- Based on the building size, occupancy type, and installation of automatic sprinkler protection, the allowable construction type could be any type other than Type V-B. The most cost effective construction type that does not require protected construction (i.e. fireproofing) is Type ll-B. This construction type also offers the most flexibility for possible future expansion.
- There are no special locking arrangements (no locked doors) in the means of egress.

2.6.2 Building Occupancy

The CIDC RA 10-15 building is classified as a Business Occupancy (Group B). The Vehicle Processing Building is considered a Storage Occupancy – Moderate Hazard (Group S-1 Motor Vehicle Repair Garage complying with the maximum allowable quantities of hazardous materials).

2.6.3 Fire Protection

Fire protection shall be provided by a wet pipe sprinkler system in both the Main RA 10-15 Building and the Vehicle Processing Building. The system shall meet the requirements of UFC 3-600-01 and NFPA 13: Standard for the Installation of Sprinkler Systems. All sprinklers shall be quick response type.

Based on a single story building and Light/ Ordinary Hazard occupancy, it is likely that this building shall not require a fire booster pump. However, the floor plan does include space for a fire pump in the event that the water supply cannot provide the required pressure.

2.6.4 Fire Extinguishers and Cabinets

Portable fire extinguishers are provided in accordance with NFPA 10.

2.6.5 Interior Wall and Ceiling Finishes

Wall and ceiling finishes and movable partitions shall conform to the requirements of NFPA 101.

2.6.6 Fire Alarm/ Mass Notification System

The fire alarm system shall conform to requirements of UFC 3-600-01 and NFPA 101 throughout each structure. The fire alarm system shall consist of pull stations, audio and visual devices, control/annunciation panel and tamper and/or flow connection/supervision to the sprinkler system. The installation of the fire alarm system shall be in accordance with NFPA 72.

A combined Fire Alarm/Mass Notification system shall be provided in accordance with UFC 4-021-01, Mass Notification Systems. A voice evacuation system shall be used for the audible notification appliances. The speakers used for the fire alarm voice evacuation system also serve as the audible Mass Notification System. Dual clear lens / amber lens strobe lights (clear for “Fire” and amber “Mass Notification”) shall be provided for visual notification and must be installed in accordance with NFPA 72 and ADA guidelines. . A micro-phone for voice announcements (local operating console) shall be provided at the main entrance and at the side entry (most remote from the main entry).

2.7 PLUMBING

2.7.1 General

The plumbing design of the RA 10-15 CIDC building at Fort Drum complies with Unified Facilities Criteria (UFC) documents, the ABA/ADA Accessibility Standards for Federal Facilities, LEED – NC for New Construction Reference Guide 2009, and ASHRAE 189.1-2009 Standard for the Design of High-Performance Green Buildings.

The Suspect Toilet Room shall have a wall-hung stainless steel lavatory, wall-hung stainless steel water closet, and a non-breakable mirror. Accessories within this room shall be vandal resistant design.

2.7.2 Building Water Use Reduction

Low-flow plumbing fixtures are used to maximize water efficiency. Public lavatory faucets shall have a maximum flow rate of 0.5 GPM. Dual flush water closets shall be used with an effective flush volume of 1.28 gallons; and urinals shall have a maximum flush volume of 0.5 gallons.

2.7.3 Domestic Water Heating

Domestic hot water is provided by an active solar heating system with one natural gas fired water heater as a supplement and back-up. An alternative back-up system may be a heat exchanger connected to the building boilers as the heat source. All equipment shall be located in the Mechanical Room.

2.7.4 Vehicle Processing Building

The domestic hot water system for this facility is separate from the main building. An instantaneous natural gas fired water heater shall be the source of domestic hot water.

Plumbing items include a continuous trench drain with continuous grating at the inside of the overhead door, and an emergency eye wash and shower.

A lavatory and a water closet are not required for the Vehicle Processing Building since the path of travel to the nearest restroom facility does not exceed 500 feet.

2.7.5 Metering

Smart Meters shall be used to monitor the energy and resource use of the facility. Smart Meters capture complex energy or resource use information and transmit this information on a real-time (or near real-time) basis.

2.7.6 Water Meters

Provide metering and sub metering of water use including separate metering of potable water systems.

2.7.7 Natural Gas Meter and Pressure Regulator

A gas meter and pressure regulator shall be provided. The gas meter shall be a ‘Smart Meter’ and report to the Energy Management Control System.

2.8 HVAC SYSTEMS

2.8.1 General

The mechanical design for all CIDC facilities shall be in accordance with the current version of the Unified Facilities Criteria (UFC) documents and all applicable codes and standards, including the ABA/ADA Accessibility Standards for Federal Facilities, LEED – NC for New Construction Reference Guide 2009, and ANSI/ASHRAE 189.1-2009 Standard for the Design of High-Performance Green Buildings.

2.8.2 Facility Energy Conservation Requirements

Comply with ASHRAE 189.1 Chapter 7 Energy Efficiency using either the Prescription Option Section 7.4 or the Performance Option 7.5.

Plug loads shall be included in building energy modeling but shall be subtracted in the final calculation of energy performance.

2.8.3 HVAC Systems

Ventilation rates shall meet the minimum requirements of the International Mechanical Code, and the current ASHRAE Standard 62.1. The HVAC system shall provide filtered outdoor air to all occupied spaces at air volumes that meet these minimum rates.

A Demand Controlled Ventilation system shall be evaluated.

Provide permanent equipment to measure the outdoor air flow rate for each ventilation system, as required by ASHRAE 189.1

Outdoor air intake louvers or grilles shall be placed at least 10 feet above finished grade to meet the requirements of UFC 4-010-01 Minimum Antiterrorism Standards for Buildings.

Chlorofluorocarbon (CFC) based refrigerants shall not be used in HVAC and refrigeration systems.

Cooling towers shall be equipped with efficient draft eliminators in compliance with ASHRAE 189.1.

The HVAC systems shall be designed in accordance with the noise criteria (NC) ratings required for the RA 10-15 facility.

2.8.4 HVAC System Evaluations and Selection

The Baseline HVAC system, as defined by ASHRAE Standard 90.1 and used for energy modeling, is a packaged single zone constant volume system with direct expansion (DX) cooling and a fossil fuel furnace.

2.8.4.1 Proposed System 1

A system of vertical self-contained air-handling units, located in the Mechanical Room, shall be evaluated. Heat rejection options for this system include the use of an outdoor dry cooler or a closed loop cooling tower, located on grade. The outdoor environmental and climate conditions shall be evaluated to determine if a dry cooler or a wet cooling tower is the best selection.

A water-side economizer using fluid from the cooling tower or dry cooler for cooling directly, without the use of a refrigeration cycle, shall be evaluated.

2.8.4.2 Proposed System 2

An alternative system, consisting of an air-cooled chiller and interior fan coil units shall be evaluated. The air-cooled chiller shall be located on-site; waste heat recovery from the condenser shall be evaluated as an option.

2.8.4.3 Proposed System 3

A ground-source heat pump system shall also be evaluated. A ground-source heat pump system utilizes the earth as a heat source or heat sink. This type of system is highly efficient, although not considered a renewable energy system. In comparison with an air-source heat pump (a conventional system choice) the proposed ground source heat pump system is more efficient.

EER 21 for GSHP vs. 10.1 for the conventional system

COP 4.1 for GSHP vs. 2.7 for the conventional system

2.8.5 Space Heating

A two-pipe hot water system shall be evaluated for space heating including perimeter radiation and fan coil units. The heating system shall also include two natural gas hot water (one condensing, one non-condensing) boilers and pumps, located in the Mechanical Room.

2.8.6 Energy Management and Control System (EMCS)

The EMCS shall be a complete non-proprietary direct digital control (DDC) system for monitoring and control of the heating, ventilating, and air conditioning (HVAC) systems, lighting systems, and other building systems.

The EMCS system is designed as an Open system; the system can be repaired, upgraded, and/or expanded without dependence on the original system supplier.

The EMCS monitors and controls site lighting fixtures, the main RA 10-15 Building and the Vehicle Processing Building.

2.8.7 Emergency Shut-down

An air distribution system emergency shutoff switch, as required under UFC 4-010-01, shall be provided. This emergency switch is located near the main building entrance. Shut down shall also occur upon fire alarm activation.

2.8.8 Evidence Depository

The Evidence Depository Room of the CIDC building shall be provided with a separate HVAC system in order to provide 24/7 space conditioning without operating the main HVAC systems. The separate HVAC system is also intended to contain fumes and odors within Evidence Depository.

2.8.9 Telecommunication Room

The Telecommunication Room is served by an independent and dedicated air-handling air-conditioning system. The nominal cooling capacity is 1-1/2 ton. The room shall be conditioned 24 hours per day, 7 days per week to a temperature of 72 degrees F (dry bulb) and to a relative humidity of 50%.

2.8.10 Arms Vault

The independent system for the Vault shall include a dehumidifier. The system shall be located outside of the caged area of the Vault.

2.8.11 Mechanical Room

The Mechanical Room shall be provided with a combustible gas detector and carbon monoxide detectors.

2.8.12 HVAC Systems for the Vehicle Processing Building

Ventilation rates shall meet or exceed the minimum requirements of the International Mechanical Code, and the current version of ASHRAE Standard 62.1.

Provide permanent equipment to measure the minimum outdoor air flow rate for the ventilation system, as required by ASHRAE 189.1. Exhaust rates shall be in accordance with the current edition of the International Mechanical Code and the current edition of ASHRAE Standard 62.1.

For heating, the indoor design temperature shall be 60 degrees F db. For cooling; the indoor design conditions shall be 80 degrees F db and 60% relative humidity.

The space heating system shall be a natural gas fired overhead infrared radiant heating system. For comparison, a fan coil system using a natural gas fired boiler shall be modeled.

The Vehicle Processing Building shall also have both a combustible gas detector and carbon monoxide detectors.

2.9 ELECTRICAL

2.9.1 Lighting

The interior and exterior lighting is compliant to IESNA Standards and meets ASHRAE Standards 90.1-2007 and 189.1-2009. The lighting design was done using the software AGI32 v2.21 instead of the built-in REVIT lighting calculation software. Differences between the two programs are the method of calculation. AGI32 uses the point-by-point method as supposed to the zonal cavity method used by REVIT. The zonal cavity method is less accurate because it uses a ratio to find the foot-candles as opposed to the average of all the points, used in the point-by-point method.

The lighting design for individual rooms includes a task light in order to better meet the occupier's needs. The illumination levels (measured in foot candles) achieved with general purpose lighting and task lighting are as follows:

Private Office	50fc
Lobbies, Lounges, Reception	10fc
Toilet	5fc
Corridor	5fc

Offices are provided with a recessed troffer direct fluorescent lighting system. The conceptual design analysis showed this to be the most efficient scheme. A troffer was chosen in order to meet the lighting power density ratio stipulated in ASHRAE 90.1 and 189.1. Transitional areas have recessed downlights. The Mechanical, Electrical, Telecommunication and TOE Storage Rooms shall consist of linear industrial fluorescent fixtures. The Restrooms shall feature wet location downlights to deal with the high levels of moisture in the room. Light switches and occupancy sensors shall be provided on the basis of ASHRAE 90.1 and 189.1.

The lighting for the corridors, open offices, and the exterior of the RA 10-15 Field Operations building, including site light fixtures associated with the building, shall be controlled by a digital, IP-addressable, microprocessor-based, programmable lighting control system. The system shall contain an accurate time-based astronomical digital clock, network graphical user interface, and local overrides. The exterior fixtures associated with parking areas shall contain photoelectric cells and controllers, so that the total amount of site lighting can be reduced to minimal levels during non-business hours. Lighting associated with site security shall be controlled manually and shall be kept to minimal levels.

The Observation Room lighting fixtures shall include dimming controls.

The "space-by-space" method was used for the lighting power density (LPD) calculation for the building. LPD using this method is found by determining the interior power allowance (AHSRAE 90.1- 2007, table 9.6.1). Then multiply the floor area(s) of the space(s) times the allowed LPD for the space type. The

interior lighting power allowance is the sum of the light power allowances of all spaces. Calculations can be found in the Revit model.

2.9.2 Emergency and Exit Lighting

All areas of the building shall be provided with LED emergency and exit lighting and shall comply with NFPA 101. General purpose lighting fixtures, in the path of egress, include battery packs and lamps for emergency lighting. An emergency generator is not included in this facility.

2.9.3 Electrical Power

The electrical transformer for the RA 10-15 facility shall be a 150kVA, 13.2kV – 480Y/277V, liquid-filled pad mount transformer. A 480Y/277V – 3P, 4W secondary service shall be run underground from the transformer to the main distribution panel located in the Main Electrical Room, utilizing one(1) set of four (4) #4/0 AWG plus one (1) #6 AWG 600V 90°C copper conductor in EB Type-20 concrete encased ductbank. The primary service to the transformer shall be one(1) set of #2 AWG 15-kV 133% EPR copper conductor with one (1) 100% ground. Primary protection for the transformer shall be provided in accordance with the National Electrical Code (NEC). The size of the service transformer estimate was based on the requirement of UFC 3-501-01 3-2.3.1. This requirement states that "For building design no service transformer can exceed 12VA/ft²". However, since the calculated size was 127-kVA, the next commercially available size of 150kVA was chosen.

Power distribution for the facility shall emanate from the building's Main Electrical Room. Surge suppression shall be provided for the 480Y/277V main electrical service and the main 208Y/120V panel. 480Y/277V power shall be provided for lighting and large mechanical loads. It is anticipated that there shall be one (1) 400A main service panel, with a 225A main circuit breaker, plus one (1) 100A MLO panel for lighting and one (1) 480Y/277V-3P, 4W, 225A MLO panels for mechanical loads. From the 480V-3P, the power shall be transformed down to 208Y/120V for general convenience power receptacles and small mechanical loads via a 75kVA k-rated transformer (k-4). It is estimated that there shall be one (1) 208Y/120V-3P, 4W, 250A MCB MDP panel. The Telecommunication Room shall receive one (1) 208Y/120V-100A MLO panel and there shall be one (1) 208Y/120V-150A MLO panel for general receptacle loads. 600V 90°C copper feeders for sub-panels shall be provided as required.

The facility shall contain one (1) 208Y/120V-3P, 60A twist-lock water-proof receptacle, one (1) 208Y/120V-3P manual transfer switch, and one (1) 208Y/120V-3P 60A main circuit breaker panel for the estimated mission essential power requirements. Mission essential power shall be provided by a portable generator, which shall be rented or leased. This portable generator is a future item, and is intended for, per the program requirements, the mission essential power and not for any life safety systems. It is estimated that mission essential load is about 15-kW.

CIDC requires that one refrigerator and one freezer be supplied with power through the mission essential power system.

2.9.4 Grounding

The building structure shall be grounded in accordance with UFC requirements. A complete copper grounding system shall be provided. A ground ring shall be installed, connected to the building structure at each steel column. Neutrals of the electrical distribution system shall be bonded at the main distribution panels.

The Vehicle Processing Building shall have a separate grounding system.

2.9.5 Lighting and Electrical Power for Vehicle Processing Building

Lighting fixtures for the Vehicle Processing Building shall include overhead and wall mounted fixtures, in order to illuminate the sides and underside of vehicles when on the lift.

The Vehicle Processing Building shall have a separate electrical distribution panel, fed from the main distribution panel. This panel provides power to lighting fixtures, receptacles, special items, and mechanical equipment. The panel shall be recessed mounted on the interior of the building and shall contain a main circuit breaker.

2.10 COMMUNICATIONS AND SECURITY SYSTEMS

2.10.1 Information Systems

Information systems shall consist of a complete end-to-end voice, data cable based functional design accomplished in accordance with the I3A Technical Criteria. Information system equipment provided to satisfy the service requirements of this facility shall meet the technical specifications and planning guidance found in ANSI/TIA/EIA-568-B and 569-A, as appropriate.

System provisions shall be compliant with the requirements of the Department of Defense (DoD) ABA/ADA Standards for accessibility.

Metallic separation is provided between telecommunication and power wiring in power poles, under floor conduit systems, and systems furniture raceways.

2.10.2 Telecommunications Systems

Telephone and data communications for the facility shall be distributed throughout the building from the Telecommunications Room. Punch down blocks, Cat-6 4-pair cable, 50 µm multimode fiber optic cable, and telephone jacks shall be provided for the horizontal distribution as part of this project. For data communication, patch panels, Cat-6 4-pair cable and data jacks shall be provided. All cables shall be numbered by room and jack for both telephone and jack. Data cables shall be color-coded. Two (2) 8P8C, 568B type, shall be used for voice and data with appropriate label. Fiber optic adapters and connectors shall be TIA/EIA “SC” type (568SC). CATV and CCTV connections shall be provided through 75 ohm coaxial cable.

2.10.3 Data System

Data jacks shall be terminated on Category 6 110 RJ-45 termination panels located on racks in the Telecomm Room.

2.10.4 Telecommunication Requirements for Vehicle Processing Building

The system design includes two phone and two data lines, routed from the Main Building underground to the Vehicle Processing Building.

2.10.5 Information System Equipment

All equipment provided for the facility shall meet the functional standards found in the I3A Technical Criteria. The building's interior copper cabling shall be EIA/TIA 568B.

2.10.6 Protected Distribution System (PDS) Infrastructure

The PDS is designed and shall be installed in accordance with the I3A Technical Criteria. All PDS cable distribution and telecommunications systems comply with the I3A Technical Criteria (for design and allocations) and with the latest versions of ANSI/TIA/EIA 568B (for technical implementation).

The installation shall follow the requirements of ANSI/TIA/EIA-569-A for telecommunications paths and Equipment Room spaces. Provide dedicated PDS raceway space and Equipment Room space for the purpose of future fiber optic cable installation to each outlet location initially served only by copper

cable(s). Provide space for future data and communication cabling. Provide I3A standard dual-jack voice/data outlets throughout core areas and the supply/administration areas; use I3A functional area outlet-densities to determine the outlet quantities. Provide data outlets for all planned computer equipped desktops. Use of multiple-jack outlets to serve desktop locations, (i.e., up to four 8P8C RJ-45 type jacks) is typical.

2.10.7 Paging Systems

A zoned paging system shall be provided for the main RA 10-15 Building and the Vehicle Processing Building. The system shall allow paging to individual rooms and to all building areas. Select outdoor spaces, as determined by the user, shall be served by the public area system.

2.10.8 Audio/ Visual System

Audio/Visual systems are designed and shall be installed to comply with I3A Technical Criteria and the program requirements. Provisions (consisting of a power receptacle and conduit for signal wiring) for a GFGI projector shall be provided in each Conference Room. CATV shall be provided in Conference Rooms. The cable television system shall consist of cabling, pathways, and outlets.

RA 10-15 building CATV systems shall conform to applicable criteria including I3A Technical Criteria and UFC 3-580-01 Telecommunications Building Cabling Systems Planning/Design. A camera and microphone for audio/video recording shall be provided at each Interview Room.

2.10.9 Electronic Security System (ESS)

The security infrastructure shall be designed and installed to support Government-furnished equipment including ICIDS systems, CCTV surveillance systems, and restricted access systems. Provisions shall include dedicated power circuits, communications connections, raceways, and signal wiring for user installed devices.

Design of security systems shall also be coordinated with the Mandatory Center of Expertise (MCX) Electronic Security Center, U.S. Army Installation Support Center, Huntsville, Alabama.

All unclassified telecommunications systems and associated infrastructure shall be electrically and physically isolated from all classified telecommunications systems in accordance with NSTISSAM requirements. TEMPEST requirements shall be met on a per site basis dependent on the facility zone type and the equipment NSTISSAM level.

An alarm and closed circuit television (CCTV) system shall be provided. An alarm shall be placed at each exterior door and CCTV cameras shall be installed in corridors and at building entrances.

2.10.10 Security Locks

Security locks are required for Arms Vault and the Evidence Processing, Evidence Custodian and Evidence Depository Rooms.

2.10.11 Clock System

Clocks shall be provided in Conference Rooms and in Visitor Waiting Areas.

2.10.12 Mass Notification System

Provide a mass notification system conforming to UFC 4-010-01 and UFC 4-021-01 for the purpose of providing real-time announcements in the immediate vicinity of the building during emergency situations. Coordinate specific system requirements with the user and the Installation. The mass notification control panel shall be located in the office of the Duty Agent.

See section 2.6 FIRE PROTECTION

End of Section

APPENDIX A

PROJECT TRACKING SHEET

Facility Type Compliance Documentation:

PROJECT TRACKING SHEET

Item	Component	Min. Requirements	Proposed/Designed to
Project ID	Category Code	14114	
	Building Code used and year		N/A
	Facility Type (i.e. 1300 PP, DFAC, 1300 Trainee)	Criminal Investigation Command Field Operations Building RA 10-15 Ft Drum, NY	N/A
	Building Gross Area	10575 f²	
	Design/Construction Method (i.e. Design-Build, Design-Bid-Build, Adapt-Build, Unique)	Adapt-Build	N/A
	Number of building stories	1	N/A
1. Roof	Insulation (R-Value)	R-49	R-60
	Surface reflectance	Note 1	
2. Walls	Insulation (R-Value)	R-13 + R-10 ci	R-21 + R-10 ci
3. Floors	Insulation (R-Value)	R-15 for 24”	
4. Doors	Assembly (U-Value)	U-0.400	
5. Infiltration	Bldg Envelope Air Leakage	Note 1	
6. Vertical Glazing	Window to Gross Wall (Percentage)	40%	≈9.7%
	Thermal transmittance	U-0.250	
	Solar heat gain coefficient	SHGC-0.45	
7. Interior Lighting	Lighting Power Density	LPD-0.9	
	Ballast Type	Electronic	
8. HVAC	Air Conditioning (Cooling)	See Mechanical Design Narrative	
	Heating		
9. Renewable Energy		See Energy Narrative	
10. Energy Model	Energy Analysis Tools	TRACE 700	
11. Outdoor Design Temperatures	Dry-bulb and Wet-bulb Temperatures	99.6% - -12°F 1% DB - 83°F 1% WB - 70°F	
12. Indoor Design Temperatures	Dry-bulb and Wet-bulb Temperatures	H - 70°F DB H – 58.5°F WB C - 75°F DB C – 62.5°F SB	
13. Climatic Zone		6A	
14. Building Energy Density	kBTU/SQFT*year	Approx 40 kBTU/SQFT*year	

Item	Component	Min. Requirements	Proposed/Designed to
15. Peak Energy Usage Electrical Gas Other	KWh		
16. Annual Energy Usage Electrical Gas Other	KWh		
17. Tons of Annual Carbon Emission	Tons		
18. LEED Version and Rating	LEED v3.0 LEED Silver	50 points	60 points
19. LEED credits earned, with percentage in Water and Energy- Gross percentage of anticipated energy savings versus baseline- Gross percentage of anticipated water savings versus baseline-			

Notes:

1. List applicable criteria, minimum requirements, and actual provided requirements.
2. Provide detailed design narrative of system and approach to meeting energy and sustainable goals in design analysis, including all energy consuming equipment, components, and energy reduction features utilized to meet energy reduction goals. On tracking sheet provide Tons of Cooling and MBH of heating. Provide energy reduction due to use of renewable energy.
3. Provide values based on applicable criteria
4. Provide two baseline values for minimum as determined by EPACT 2005 and ASHREA 90.1 calculation methodologies. Proposed column shall reflect design values proposed.
5. Energy Analysis is to be performed using Trane Trace 700. All associated Trace data files ".TRC" files are to be provided on CD or DVD. Trane trace has an archive feature by which files can be bundled and restored for use by other's review and use. Other energy analysis programs are not acceptable.

APPENDIX B

ARCHITECTURAL CALCULATIONS

CORRECTED FINAL SUBMISSION
12 SEPTEMBER 2012

PARSONS BRINCKERHOFF
COMPUTATION SHEET

Subject: ENVELOPE U-FACTORS - RA 10-15 (Ft. Drum)

Made by: JPB
Date: 01/30/12
Checked by:
Date:

ROOF

1. Cavity Air Film
2. 1" Polyiso
3. Metal Deck
4. 9-1/2" Batt Insulation
5. 9-1/2" Batt Insulation
6. 5/8" Gyp Board
7. Interior Air Film

$R_1 := 0.34$ $R_5 := 30$

$R_2 := 5$ $R_6 := 0.56$

$R_3 := 0$ $R_7 := 0.61$

$R_4 := 30$

$$U := \frac{1}{R_1 + R_2 + R_3 + R_4 + R_5}$$

$U = 0.015$

Assumptions

Air cavity for "cool roof" system provides 0.34 R-value because of induction.

Insulation value for the building envelope begins at the "cool roof" air cavity.

WALL

1. Exterior Air Film
2. 4" Brick
3. 1-1/2" Airspace
4. 2" Polyiso
5. 1/2" Gyp Sheathing
6. 6" Batt Insulation
7. 5/8" Gyp Board
8. Interior Air Film

$R_1 := 0.17$ $R_5 := 0.3$

$R_2 := 0.75$ $R_6 := 21$

$R_3 := 2$ $R_7 := 0.56$

$R_4 := 10$ $R_8 := 0.68$

$$U := \frac{1}{R_1 + R_2 + R_3 + R_4 + R_5 + R_6 + R_7 + R_8}$$

$U = 0.028$

FLOOR

1. Concrete Slab on Grade
2. Insulation - R-15 for 24 in.

$R_1 := 3.2$

$R_2 := 2.6$

$$U := \frac{1}{R_1 + R_2}$$

$U = 0.172$

PARSONS BRINCKERHOFF
COMPUTATION SHEET

Subject: ENVELOPE U-FACTORS - RA 10-15 Vehicle Processing

Made by: JPB
Date: 01/30/12
Checked by:
Date:

ROOF

1. Exterior Air Film
2. Standing Seam Metal Roof
3. EPDM
4. 3" Insulation
5. Metal Deck
6. Interior Air Film

$R_1 := 0.17$ $R_5 := 0$
$R_2 := 0$ $R_6 := 0.61$
$R_3 := 0$
$R_4 := 15$

$$U := \frac{1}{R_1 + R_2 + R_3 + R_4 + R_5 + R_6}$$

$U = 0.063$

WALL

1. Exterior Air Film
2. 4" Brick
3. 2" Airspace
4. 2" Polyiso
5. 8" CMU
6. 4" Insulation
7. 5/8" Gyp Board
8. Interior Air Film

$R_1 := 0.17$ $R_5 := 1.11$
$R_2 := 0.75$ $R_6 := 14$
$R_3 := 2$ $R_7 := 0.56$
$R_4 := 10$ $R_8 := 0.68$

$$U := \frac{1}{R_1 + R_2 + R_3 + R_4 + R_5 + R_6 + R_7 + R_8}$$

$U = 0.034$

FLOOR

1. Concrete Slab on Grade
2. Insulation - R-15 for 24 in.

ROOM DATA				OCCUPANCY DATA		
Number	Name	Area	Volume	Type	Load Factor	LOAD TOTAL
141	ADMIN / OPS ROOM	670 SF	6028 CF	B	100	7
126	ARMS VAULT	64 SF	576 CF			
131	CORRIDOR	773 SF	6953 CF	NA		
139	CORRIDOR	128 SF	1150 CF	NA		
102	CORRIDOR	141 SF	1266 CF	NA		
105	CORRIDOR	220 SF	1984 CF	NA		
114	CORRIDOR	454 SF	4087 CF	NA		
120	CORRIDOR	120 SF	1076 CF	NA		
110	CRIMINAL INTELLIGENCE CENTER ROOM	298 SF	2680 CF	B	100	3
130	CRIMINAL INVESTIGATOR OFFICE	154 SF	1389 CF	B	100	2
133	DRUG SUPPRESSION TEAM OFFICE	154 SF	1387 CF	B	100	2
134	DRUG SUPPRESSION TEAM OFFICE	154 SF	1387 CF	B	100	2
123	DUTY AGENT OFFICE	153 SF	1374 CF	B	100	2
129	ELECTRICAL ROOM	134 SF	1202 CF	M/E	300	1
001	ENTRY VESTIBULE	132 SF	1184 CF	NA		
121	EVIDENCE CUSTODIAN OFFICE	168 SF	1516 CF	B	100	2
122	EVIDENCE DEPOSITORY ROOM	497 SF	4477 CF	S	300	2
124	EVIDENCE PROCESSING	169 SF	1522 CF	B	100	2
132	INVESTIGATIVE OPS TECH OFFICE	156 SF	1403 CF	B	100	2
142	JANITOR	51 SF	460 CF	NA		
109	LARGE INTERVIEW ROOM	254 SF	2282 CF	B	100	3
128	MECHANICAL ROOM	439 SF	3955 CF	M/E	300	2
103	MEN	153 SF	1379 CF	B	100	2
106	MULTI-PURPOSE LOUNGE	496 SF	4461 CF	A-3	15	34
117	OBSERVATION ROOM	143 SF	1285 CF	B	100	2
113	PHOTO ID ROOM	130 SF	1170 CF	B	100	2
115	POLYGRAPH EXAM OFFICE	104 SF	937 CF	B	100	2
116	POLYGRAPH EXAM ROOM	108 SF	968 CF	B	100	2
140	RECYCLE CLOSET	39 SF	348 CF	S	300	1
107	SHOWER	119 SF	1071 CF	B	100	2
112	SMALL INTERVIEW ROOM	139 SF	1250 CF	B	100	2
111	SMALL INTERVIEW ROOM	141 SF	1269 CF	B	100	2
108	SPECIAL AGENT IN CHARGE	199 SF	1790 CF	B	100	2
135	SPECIAL AGENT OFFICE	154 SF	1387 CF	B	100	2
136	SPECIAL AGENT OFFICE	154 SF	1387 CF	B	100	2
137	SPECIAL AGENT OFFICE	148 SF	1333 CF	B	100	2
138	SPECIAL AGENT OFFICE	165 SF	1484 CF	B	100	2
119	SUSPECT TOILET	41 SF	373 CF	B	100	1
118	SUSPECT WAITING ROOM	159 SF	1433 CF	B	100	2
125	TABLE OF ORGANIZATION AND EQUIPMENT STORAGE	517 SF	4657 CF	S	300	2
127	TELECOM ROOM	144 SF	1294 CF	M/E	300	1
003	VESTIBULE NORTH	66 SF	591 CF	NA		
002	VESTIBULE WEST	64 SF	573 CF	NA		
101	VISITOR WAITING AREA	251 SF	2259 CF	A-3	15	17
104	WOMEN	157 SF	1412 CF	B	100	2
		9271 SF	83443 CF			118

PARSONS BRINCKERHOFF
COMPUTATION SHEET

Prepared by: JPB
Date: 1/30/2011

SUBJECT: Minimum Plumbing Fixture Requirements per IPC 2009

				WATER CLOSETS		LAVATORIES				
PROJECT BUILDING	CLASS	OCCUPANCY TYPE	NO. OF PEOPLE	MALE	FEMALE	MALE	FEMALE	SHOWERS	DRINKING FOUNTAINS	OTHER
RA 5-9	Business	B	11	1		1	1	-	-	1 service sink
RA 10-15	Business	B	19	1	1	1	1	-	1	1 service sink
Detachment 24	Business	B	30	1	1	1	1	-	1	1 service sink
Battalion HQ	Business	B	50 + 50 transient	2	2	2	2	-	1	1 service sink
Vehicle Processing	Storage	S-1	2	1		1		See Section 411 of IPC	-	1 service sink

NOTE: Separate facilites are not required for structures with a total occupant load of 15 or less. This applies to the RA 5-9. This also applies to drinking fountain requirements.

APPENDIX C

STRUCTURAL CALCULATIONS

CORRECTED FINAL SUBMISSION
12 SEPTEMBER 2012

CIC – Detachment 10-15

Ft. Drum, New York

Structural Calculations for
30% Design Development
24-Apr-2012

Prepared for ACOE By:

PARSONS BRINCKERHOFF

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Code Search

CIC – Detachment 10-15; Ft. Drum, New York

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JOB TITLE CIC Detachment 10-15 Building

JOB NO. 173133C **SHEET NO.**
CALCULATED BY T.Corwith **DATE** 4/23/12
CHECKED BY **DATE**

Code Search

I. Code: International Building Code 2006

II. Occupancy:

Occupancy Group = B Business

III. Type of Construction:

Fire Rating:
Roof = 0.0 hr
Floor = 0.0 hr

IV. Live Loads:

Roof angle (θ) 4.00 / 12 18.4 deg

Roof 0 to 200 sf: 20 psf
200 to 600 sf: 24 - 0.02Area, but not less than 12 psf
over 600 sf: 12 psf

Floor	100 psf
Stairs & Exitways	100 psf
Balcony / Deck	100 psf
Mechanical	125 psf
Partitions	N/A

V. Wind Loads : ASCE 7 - 05

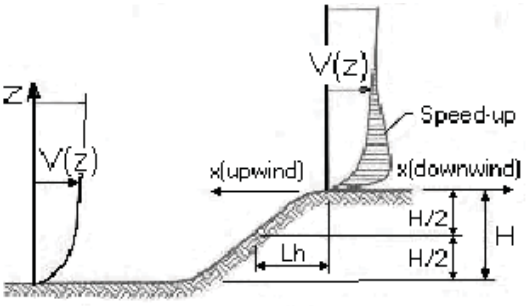
Importance Factor	1.00
Basic Wind speed	90 mph
Directionality (Kd)	0.85
Mean Roof Ht (h)	21.0 ft
Parapet ht above grd	0.0 ft
Minimum parapet ht	0.0 ft
Exposure Category	C
Enclosure Classif.	Enclosed Building
Internal pressure	+/-0.18
Type of roof	Gable
Building length (L)	161.7 ft
Least width (B)	65.0 ft
Kh case 1	0.911
Kh case 2	0.911

Topographic Factor (Kzt)

Topography	Flat	
Hill Height (H)	0.0 ft	H< 15ft;exp C
Half Hill Length (Lh)	0.0 ft	∴ Kzt=1.0
Actual H/Lh =	0.00	
Use H/Lh =	0.00	
Modified Lh =	0.0 ft	
From top of crest: x=	0.0 ft	
Bldg up/down wind?	downwind	

H/Lh= 0.00	K_1 =	0.000
x/Lh = 0.00	K_2 =	0.000
z/Lh = 0.00	K_3 =	1.000

At Mean Roof Ht:
$Kzt = (1+K_1K_2K_3)^2$ = 1.000



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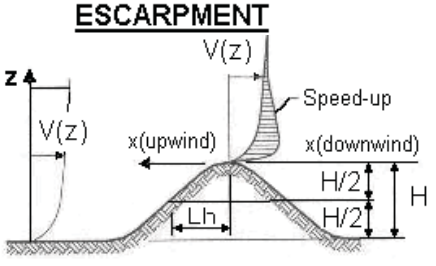

2D RIDGE or 3D AXISYMMETRICAL HILL

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V. Wind Loads - cont.:

Gust Effect Factor

Flexible structure if natural frequency < 1 Hz (T > 1 second).
However, rule of thumb if building is if h/B < 4 then rigid structure.

h =	21.0 ft
use this h :	21.0 ft
B =	65.0 ft
Calculated /z =	15.0 ft
Use this /z :	15.0 ft

h/B = 0.32 Therefore, probably rigid structure

G = 0.85 Using rigid structure default

Rigid Structure

/ε =	0.20
l =	500 ft
z_{min} =	15 ft
c =	0.20
g_Q, g_v =	3.4
L_z =	427.1 ft
Q =	0.90
I_z =	0.23
G =	0.87 use G = 0.85

Flexible or Dynamically Sensitive Structure

Natural Frequency (n_1) =	0.0 Hz			
Damping ratio (β) =	0			
/b =	0.65			
/α =	0.15			
Vz =	76.0			
N_1 =	0.00			
R_n =	0.000			
R_h =	28.282	η =	0.000	h = 21.0 ft
R_B =	28.282	η =	0.000	
R_L =	28.282	η =	0.000	
g_R =	0.000			
R =	0.000			
G =	0.000			

Enclosure Classification

Test for Enclosed Building: A building that does not qualify as open or partially enclosed.

Test for Open Building: All walls are at least 80% open.
Ao ≥ 0.8Ag

Test for Partially Enclosed Building:

	Input
Ao	0.0 sf
Ag	0.0 sf
Aoi	0.0 sf
Agi	0.0 sf

	Test
Ao ≥ 1.1Aoi	YES
Ao > 4' / 0.01Ag	NO
Aoi / Agi ≤ 0.20	NO

Building is NOT Partially Enclosed.

Conditions to qualify as Partially Enclosed Building. Must satisfy all of the following:
Ao >= 1.1Aoi
Ao > smaller of 4' or 0.01 Ag
Aoi / Agi <= 0.20
Where:
Ao = the total area of openings in a wall that receives positive external pressure.
Ag = the gross area of that wall in which Ao is identified.
Aoi = the sum of the areas of openings in the building envelope (walls and roof) not including Ao.
Agi = the sum of the gross surface areas of the building envelope (walls and roof) not including Ag.

Reduction Factor for large volume partially enclosed buildings (Ri):

If the partially enclosed building contains a single room that is unpartitioned , the internal pressure coefficient may be multiplied by the reduction factor Ri.

Total area of all wall & roof openings (Aog):	0 sf
Unpartitioned internal volume (Vi) :	0 cf
Ri =	1.00

Altitude adjustment to constant 0.00256 :

Altitude = 0 feet Average Air Density = 0.0765 lbm/ft^3
Constant = 0.00256

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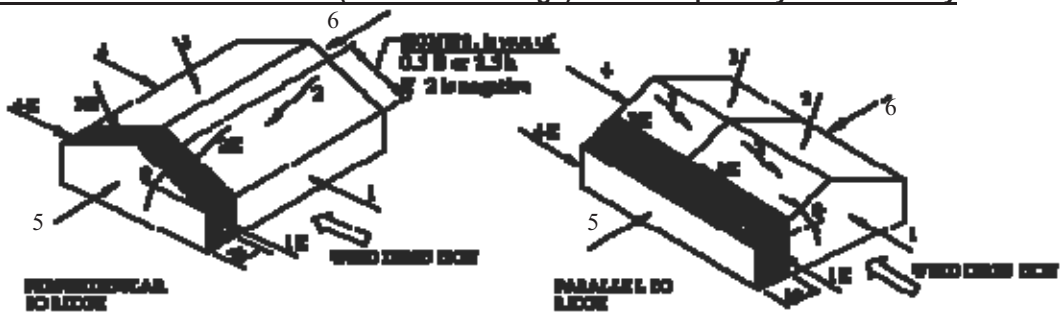
V. Wind Loads - MWFRS h≤60' (Low-rise Buildings) Enclosed/partially enclosed only



Torsional loads are 25% of zones 1 - 4. See code for loading diagram

Transverse Direction

Kz = Kh (case 1) = 0.91
Base pressure (qh) = **16.1 psf**
GCpi = +/-0.18

Longitudinal Direction

Edge Strip (a) 6.5 ft
End Zone (2a) 13.0 ft
Zone 2 length = 32.5 ft

	Transverse Direction			Longitudinal Direction			
	Perpendicular θ = 18.4 deg			Parallel θ = 0.0 deg			
Surface	GCpf	w/-GCpi	w/+GCpi	GCpf	w/-GCpi	w/+GCpi	
1	0.52	0.70	0.34	0.40	0.58	0.22	
2	-0.69	-0.51	-0.87	-0.69	-0.51	-0.87	
3	-0.47	-0.29	-0.65	-0.37	-0.19	-0.55	
4	-0.42	-0.24	-0.60	-0.29	-0.11	-0.47	
5	-0.45	-0.27	-0.63	-0.45	-0.27	-0.63	
6	-0.45	-0.27	-0.63	-0.45	-0.27	-0.63	
1E	0.78	0.96	0.60	0.61	0.79	0.43	
2E	-1.07	-0.89	-1.25	-1.07	-0.89	-1.25	
3E	-0.67	-0.49	-0.85	-0.53	-0.35	-0.71	
4E	-0.62	-0.44	-0.80	-0.43	-0.25	-0.61	

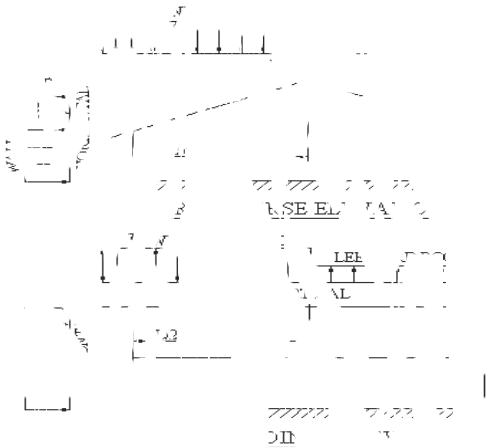
Wind Surface pressures (psf)

1	11.2	5.4	9.3	3.5	
2	-8.2	-14.0	-8.2	-14.0	
3	-4.6	-10.4	-3.1	-8.8	
4	-3.8	-9.6	-1.8	-7.5	
5	-4.3	-10.1	-4.3	-10.1	
6	-4.3	-10.1	-4.3	-10.1	
1E	15.4	9.6	12.7	6.9	
2E	-14.3	-20.1	-14.3	-20.1	
3E	-7.9	-13.7	-5.6	-11.4	
4E	-7.0	-12.8	-4.0	-9.8	

Windward roof overhangs: 10.9 psf (upward) add to windward roof pressure

Parapet

Windward parapet: 0.0 psf (GCpn = +1.5)
Leeward parapet: 0.0 psf (GCpn = -1.0)



Horizontal MWFRS Simple Diaphragm Pressures (psf)

Transverse direction (normal to L)

Interior Zone: Wall 15.0 psf
Roof -3.6 psf
End Zone: Wall 22.5 psf
Roof -6.4 psf

Longitudinal direction (parallel to L)

Interior Zone: Wall 11.1 psf
End Zone: Wall 16.7 psf

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JOB TITLE CIC Detachment 10-15 Building

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V. Wind Loads - Components & Cladding: Buildings h≤60' & Alternate design 60'<h<90'

Kz = Kh (case 1) = 0.91 GCpi = +/-0.18 NOTE: If tributary area is greater than
Base pressure (qh) = **16.1 psf** a = 6.5 ft 700sf, MWFRS pressure may be used.
Roof Angle = 18.4 deg

Type of roof = Gable

Roof	GCp +/- GCpi			Surface Pressure (psf)			**User input**	
Area	10 sf	50 sf	100 sf	10 sf	50 sf	100 sf	20 sf	250 sf
Negative Zone 1	-1.08	-1.01	-0.98	-17.3 psf	-16.2 psf	-15.7 psf	-16.9 psf	-15.7 psf
Negative Zone 2	-1.88	-1.53	-1.38	-30.2 psf	-24.6 psf	-22.2 psf	-27.8 psf	-22.2 psf
Negative Zone 3	-2.78	-2.36	-2.18	-44.6 psf	-37.9 psf	-35.0 psf	-41.7 psf	-35.0 psf
Positive All Zones	0.68	0.54	0.48	10.9 psf	10.0 psf	10.0 psf	10.0 psf	10.0 psf
Overhang Zone 2	-2.20	-2.20	-2.20	-35.3 psf	-35.3 psf	-35.3 psf	-35.3 psf	-35.3 psf
Overhang Zone 3	-3.70	-2.86	-2.50	-59.4 psf	-46.0 psf	-40.2 psf	-53.6 psf	-40.2 psf

Walls	GCp +/- GCpi			Surface Pressure (psf)			**User input**	
Area	10 sf	100 sf	500 sf	10 sf	100 sf	500 sf	50 sf	200 sf
Negative Zone 4	-1.28	-1.10	-0.98	-20.6 psf	-17.7 psf	-15.7 psf	-18.6 psf	-16.9 psf
Negative Zone 5	-1.58	-1.23	-0.98	-25.4 psf	-19.7 psf	-15.7 psf	-21.4 psf	-18.0 psf
Positive Zone 4 & 5	1.18	1.00	0.88	19.0 psf	16.1 psf	14.1 psf	17.0 psf	15.3 psf

Parapet

qp = 0.0 psf

CASE A = pressure towards building
CASE B = pressure away from building

	Surface Pressure (psf)			**User input**
Solid Parapet Pressure	10 sf	100 sf	500 sf	40 sf
CASE A : Interior zone :	0.0 psf	0.0 psf	0.0 psf	0.0 psf
Corner zone :	0.0 psf	0.0 psf	0.0 psf	0.0 psf
CASE B : Interior zone :	0.0 psf	0.0 psf	0.0 psf	0.0 psf
Corner zone :	0.0 psf	0.0 psf	0.0 psf	0.0 psf

Rooftop Structures & Equipment

Dist from mean roof height to centroid of Af = 0.0 ft Gust Effect Factor (G) = 0.85
Height of equipment (he) = 0.0 ft Base pressure (qz) = **18.9 Kd** psf

Cross-Section Square
Directionality (Kd) 0.90

Width (D) 10.0 ft h/D = 0.00
Type of Surface N/A

Square (wind along diagonal)

Cf = 1.00
Af = 10.0 sf
Adjustment Factor (Adj) = 1.90
F = qz G Cf Af Adj= **27.5 Af**
F = 275 lbs

Square (wind normal to face)

C_f = 1.30
A_f = 10.0 sf
Adjustment Factor (Adj) = 1.900
F = q_z G C_f A_f Adj= **35.7 Af**
F = 357 lbs

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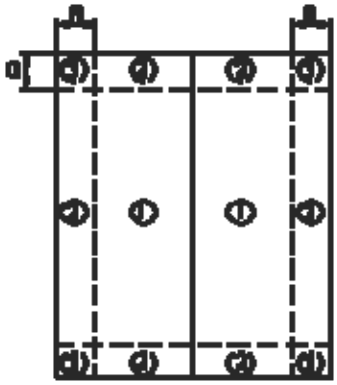
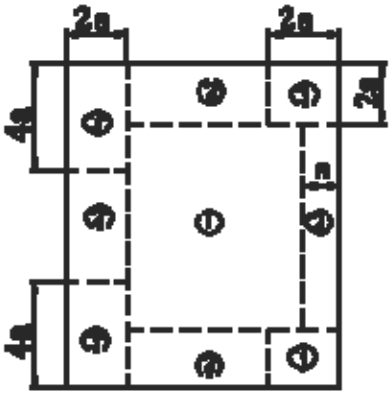
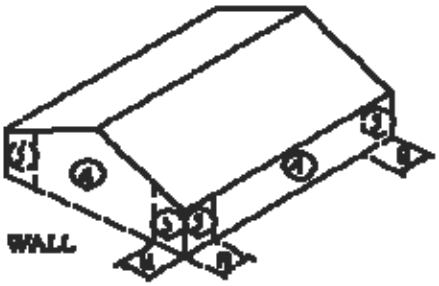
Location of Wind Pressure Zones

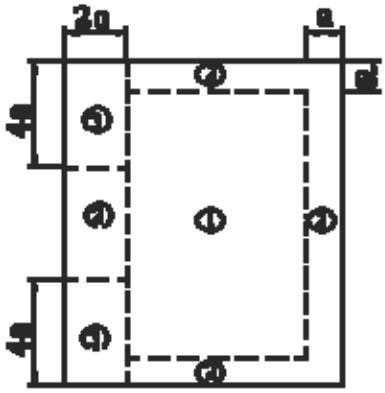


Gable $\theta \leq 7$ degrees and
Monoslope ≤ 3 degrees

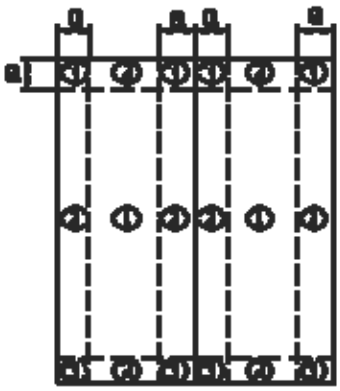


Monoslope roofs
$3° < \theta \leq 10°$

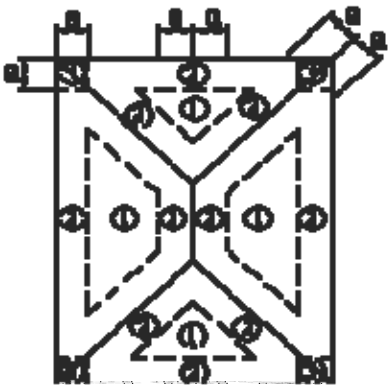




Monoslope roofs $10° < \theta \leq 30°$



Gable $7 < \theta \leq 45$ degrees



Hip $7 < \theta < 27$ degrees

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VII. Snow Loads :

Roof slope	=	18.4 deg
Horiz. eave to ridge dist (W)	=	35.0 ft
Roof length parallel to ridge (L)	=	161.7 ft

Type of Roof			Hip and gable w/ trussed systems
Ground Snow Load	Pg	=	70.0 psf
Importance Category		=	II
Importance Factor	I	=	1.0
Thermal Factor	Ct	=	1.20
Exposure Factor	Ce	=	1.0
Pf = 0.7*Ce*Ct*I*Pg		=	58.8 psf
Pf min		=	0.0 psf
Flat Roof Snow Load	Pf	=	58.8 psf
Rain on Snow Surcharge Angle		=	0.70 deg
Code Maximum Rain Surcharge			5.0 psf
Rain on Snow Surcharge		=	0.0 psf
Unobstructed Slippery Surface (per Section 7.4)		=	no
Sloped-roof Factor	Cs	=	1.00

Exposure Factor, Ce			
	Exposure of roof		
Terrain	Fully	Partially	Sheltered
A	n/a	1.1	1.3
B	0.9	1.0	1.2
C	0.9	1.0	1.1
D	0.8	0.9	1.0
Above treeline	0.7	0.8	n/a
Alaska-no trees	0.7	0.8	n/a

Design Roof Snow Load (Ps) = **58.8 psf** ("balanced" snow load)

Building Official Minimum = 58.8 psf

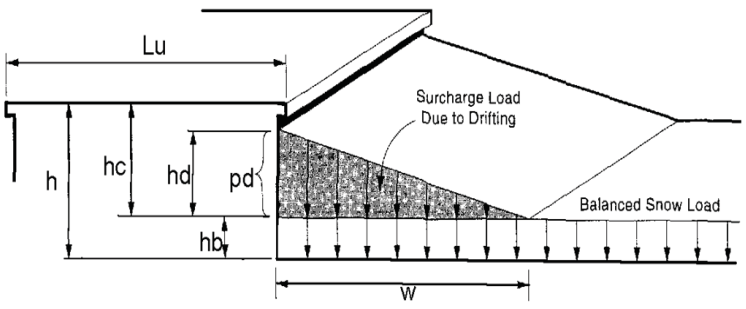
NOTE: Alternate spans of continuous beams and other areas shall be loaded with half the design roof snow load so as to produce the greatest possible effect - see code.

Unbalanced Snow Loads - for Hip & Gable roofs only

Larger of 2.38 degrees or 70/W + 0.5 =	2.5 deg	**Unbalanced snow loads must be applied**
Windward snow load =	17.6 psf	= 0.3Ps
Leeward snow load from ridge to 12.5' =	94.9 psf	= hdγ / √S + Ps
Leeward snow load from 12.5' to the eave =	58.8 psf	= Ps

Leeward Snow Drifts - from adjacent higher roof

Upper roof length	lu	=	0.0 ft
Projection height	h	=	0.0 ft
Building separation	s	=	0.0 ft
Adjacent structure factor			1.00
Snow density	γ	=	23.1 pcf
Balanced snow height	hb	=	2.55 ft
	hc	=	-2.55 ft
hc/hb <0.2 = -1.0	**Therefore, no drift**		
Drift height	hd	=	0.00 ft
Drift width	w	=	-20.36 ft
Surcharge load:	pd = g*hd	=	**0.0 psf**



Windward Snow Drifts - Against walls, parapets, etc more than 15' long

Building roof length	lu	=	160.0 ft
Projection height	h	=	2.0 ft
Snow density	γ	=	23.1 pcf
Balanced snow height	hb	=	2.55 ft
	hc	=	-0.55 ft
hc/hb <0.2 = -0.2	**Therefore, no drift**		
Drift height	hd	=	0.00 ft
Drift width	w	=	-123.94 ft
Surcharge load:	pd = g*hd	=	**0.0 psf**

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VI. Seismic Loads: ASCE 7- 05

Occupancy Category: II
Importance Factor (I) : 1.00
Site Class : D

Ss (0.2 sec) = 30.00 %g
S1 (1.0 sec) = 8.00 %g

Fa =	1.560		Sms =	0.468	S_{DS} =	0.312	Design Category =	B
Fv =	2.400		Sm1 =	0.192	S_{D1} =	0.128	Design Category =	B

Seismic Design Category = **B**
Number of Stories: 1
Structure Type: Not applicable
Horizontal Struct Irregularities: No plan Irregularity
Vertical Structural Irregularities: No vertical Irregularity
Flexible Diaphragms: Yes
Building System: **Building Frame Systems**
Seismic resisting system: **Ordinary steel concentrically braced frames**
System Building Height Limit: **Height not limited**
Actual Building Height (hn) = 21.0 ft

DESIGN COEFFICIENTS AND FACTORS

Response Modification Factor (R) = 3
System Over-Strength Factor (Ωo) = 2
Deflection Amplification Factor (Cd) = 3.25
S_{DS} = 0.312
S_{D1} = 0.128

ρ = redundancy coefficient

Seismic Load Effect (E) = ρQ_E +/- $0.2S_{DS}$ D = ρQ_E +/- 0.062D — Q_E = horizontal seismic force
Special Seismic Load Effect (E) = $\Omega o Q_E$ +/- $0.2S_{DS}$ D = 2.0 Q_E +/- 0.062D — D = dead load

PERMITTED ANALYTICAL PROCEDURES

Index Force Analysis (Seismic Category A only) Method Not Permitted

Simplified Analysis Use Equivalent Lateral Force Analysis

Equivalent Lateral-Force Analysis - Permitted

Building period coef. (C_T) =	0.020			Cu = 1.64
Approx fundamental period (Ta) =	$C_T h_n^x$ =	0.196 sec	x= 0.75	Tmax = CuTa = 0.323
User calculated fundamental period (T) =		0 sec		Use T = 0.196
Long Period Transition Period (TL) =	ASCE7 map =	6		
Seismic response coef. (Cs) =	SdsI/R =	0.104		
need not exceed Cs =	Sd1 I /RT =	0.217		
but not less than Cs =	0.044Sds =	0.014		
USE Cs =		0.104		

Design Base Shear V = 0.104W

Model & Seismic Response Analysis - Permitted (see code for procedure)

ALLOWABLE STORY DRIFT

Structure Type: All other structures

Allowable story drift = 0.020hsx where hsx is the story height below level x

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VI. Seismic Loads - cont. :

Seismic Design Category (SDC)= B

CONNECTIONS

Force to connect smaller portions of structure to remainder of structure

$Fp = 0.133 S_{DS} w_p =$ 0.04 w_p
or $Fp = 0.5 w_p =$ 0.05 w_p Use Fp = 0.05 w_p w_p = weight of smaller portion

Beam, girder or truss connection for resisting horizontal force parallel to member

F_P = no less than 0.05 times dead plus live load vertical reaction

Anchorage of Concrete or Masonry Walls to elements providing lateral support

$Fp = 0.4 IeSdsWw =$ 0.125 w_w
or $Fp = 0.1 w_w =$ 0.10 w_w Use Fp = 0.12 w_w but not less than 280.0 plf

MEMBER DESIGN

Bearing Walls and Shear Walls (out of plane force)

$Fp = 0.40 IeS_{DS} w_w =$ 0.125 w_w
or $Fp = 0.1 w_w =$ 0.10 w_w Use Fp = 0.12 w_w

Diaphragms

$Fp = 0.2 IeSdsWp + Vpx =$ 0.062 Wp + Vpx

ARCHITECTURAL COMPONENTS SEISMIC COEFFICIENTS

Seismic Design Category B & Ip=1.0, therefore only required for parapets supported by bearing or shear walls

Architectural Component : 5. Veneer
a. Limited deformability elements and attachments

Importance Factor (Ip) : 1.0

Component Amplification Factor (a_p) = 1 h= 21.0 feet
Comp Response Modification Factor (R_p) = 2.5 z= 20.0 feet z/h = 0.95

$Fp = 0.4 a_p SdsIpWp(1+2z/h)/Rp =$ 0.145 Wp
not greater than $Fp = 1.6 SdsIpWp =$ 0.499 Wp
but not less than $Fp = 0.3 SdsIpWp =$ 0.094 Wp use Fp = 0.145 Wp

MECH AND ELEC COMPONENTS SEISMIC COEFFICIENTS

Seismic Design Category B, therefore Not required

Mech or Electrical Component : Other mechanical or electrical components.

Importance Factor (Ip) : 1.0

Component Amplification Factor (a_p) = 1 h= 21.0 feet
Comp Response Modification Factor (R_p) = 1.5 z= 20.0 feet z/h = 0.95

$Fp = 0.4 a_p SdsIpWp(1+2z/h)/Rp =$ 0.242 Wp
not greater than $Fp = 1.6 SdsIpWp =$ 0.499 Wp
but not less than $Fp = 0.3 SdsIpWp =$ 0.094 Wp use Fp = 0.242 Wp

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JOB TITLE CIC Detachment 10-15 Building

JOB NO. 173133C **SHEET NO.**
CALCULATED BY T.Corwith **DATE** 4/23/12
CHECKED BY **DATE**

Roof Design Loads

Items	Description	Multiple	psf (max)	psf (min)
Roofing	Metal, copper, or tin sheets		1.5	1.0
Decking	Metal Roof deck, 1.5, 20 ga.		2.5	2.0
Framing	Steel roof beams & girders		5.0	3.0
Insulation	R-30 Fiberglass insul.	x 19.0"	17.1	8.6
Ceiling	5/8" gypsum	x 1 ply(s)	2.8	2.5
Mech & Elec	Mech. & Elec.		2.0	8.0
Sprinklers	Sprinklers		2.0	0.0
Roofing	Cool-Vent Roof		5.0	3.0
		Actual Dead Load	◉ 37.9	◉ 28.1
		Use this DL instead	○ 20.0	○ 9.0
		Live Load	20.0	0.0
		Snow Load	58.8	0.0
		Wind (zone 2 - 100sf)	10.0	-22.2
ASD Loading		Dead + Snow Load	96.7	-
		Dead + 0.75(Wind + Snow) Load	89.5	-
		0.6*Dead + Wind Load	-	-5.3
LRFD Loading		1.2D + 1.6 S + 0.8W	147.6	-
		1.2D + 1.6W + 0.5S	90.9	-
		0.9D + 1.6W	-	-10.2

Roof Live Load Reduction Roof angle 4.00 / 12 18.4 deg

0 to 200 sf: 20.0 psf
200 to 600 sf: 24 - 0.02Area, but not less than 12 psf
over 600 sf: 12.0 psf

	300 sf	18.00
	400 sf	16.00
	500 sf	14.00
User Input:	450 psf	15.00

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JOB TITLE CIC Detachment 10-15 Building

JOB NO. 173133C **SHEET NO.**
CALCULATED BY T.Corwith **DATE** 4/23/12
CHECKED BY **DATE**

CODE SUMMARY

Code: International Building Code 2006

Live Loads:

Roof	0 to 200 sf:	20 psf
	200 to 600 sf:	24 - 0.02Area, but not less than 12 psf
	over 600 sf:	12 psf
Floor		100 psf
Stairs & Exitways		100 psf
Balcony / Deck		100 psf
Mechanical		125 psf
Partitions		N/A

Dead Loads:

Floor	0.0 psf
Roof	37.9 psf

Roof Snow Loads:

Design Roof Snow load		=	58.8 psf
Flat Roof Snow Load	Pf	=	58.8 psf
Ground Snow Load	Pg	=	70.0 psf
Rain on Snow Surcharge		=	0.0 psf
Snow Exposure Factor	Ce	=	1.00
Importance Factor	I	=	1.00
Thermal Factor	Ct	=	1.20
Sloped-roof Factor	Cs	=	1.00

Wind Design Data:

Basic Wind speed	90 mph
Mean Roof Ht (h)	21.0 ft
Building Category	II
Importance Factor	1.00
Exposure Category	C
Enclosure Classif.	Enclosed Building
Internal pressure Coef.	+/-0.18
Directionality (Kd)	0.85

Earthquake Design Data:

Occupancy Category:		=	II
Importance Factor	I	=	1.00
Mapped spectral response	Ss	=	30.00 %g
accelerations	S1	=	8.00 %g
Site Class		=	D
Spectral Response Coef.	Sds	=	0.312
	Sd1	=	0.128
Seismic Design Category		=	B
Basic Structural System		=	Building Frame Systems
Seismic Resisting System		=	Ordinary steel concentrically braced frames
Design Base Shear	V	=	0.104W
Seismic Response Coef.	Cs	=	0.104
Response Modification Factor	R	=	3
Analysis Procedure		=	Equivalent Lateral-Force Analysis

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JOB TITLE CIC Detachment 10-15 Building

JOB NO. 173133C **SHEET NO.**
CALCULATED BY T.Corwith **DATE** 4/23/12
CHECKED BY **DATE**

CODE SUMMARY- continued

Component and cladding wind pressures

h>60 feet

h<= 60' - can't use procedure.

Roof	Surface Pressure (psf)		
Area	10 sf	50 sf	100 sf
Negative Zone 1	-17.3	-16.2	-15.7
Negative Zone 2	-30.2	-24.6	-22.2
Negative Zone 3	-44.6	-37.9	-35.0
Positive All Zones	10.9	10.0	10.0
Overhang Zone 2	-35.3	-35.3	-35.3
Overhang Zone 3	-59.4	-46.0	-40.2

Wall	Surface Pressure (psf)		
Area	20 sf	100 sf	500 sf
Negative Zone 4	-17.3	-15.7	-14.1
Negative Zone 5	-31.8	-25.4	-19.0
Positive Zone 4 & 5			
0 to 15'	16.4	14.1	11.9
20 ft	17.2	14.8	12.4
21 ft	17.3	14.9	12.5
26 ft	18.1	15.5	13.0

Parapet	Solid Parapet Pressure (psf)		
Area	10 sf	100 sf	500 sf
CASE A: Interior zone	0.0	0.0	0.0
Corner zone	0.0	0.0	0.0
CASE B: Interior zone	0.0	0.0	0.0
Corner zone	0.0	0.0	0.0

Building Frame Analysis

CIC – Detachment 10-15; Ft. Drum, New York

Loads:

The loads given below are a summary of the loads calculated within the *code search spreadsheet* . Designed in accordance with IBC 2006/ ASCE 7-05

Live Loads

20.0 psf Roof Live Load

Dead Loads

37.9 psf Roof Self Weight and Superimposed Dead Load

Snow Loads

58.8 psf Balanced Snow Load

Seismic Loads

Equivalent Lateral Force Method is Permitted

B SDC

0.020hsx Allowable drift

0.1040W Design Base shear

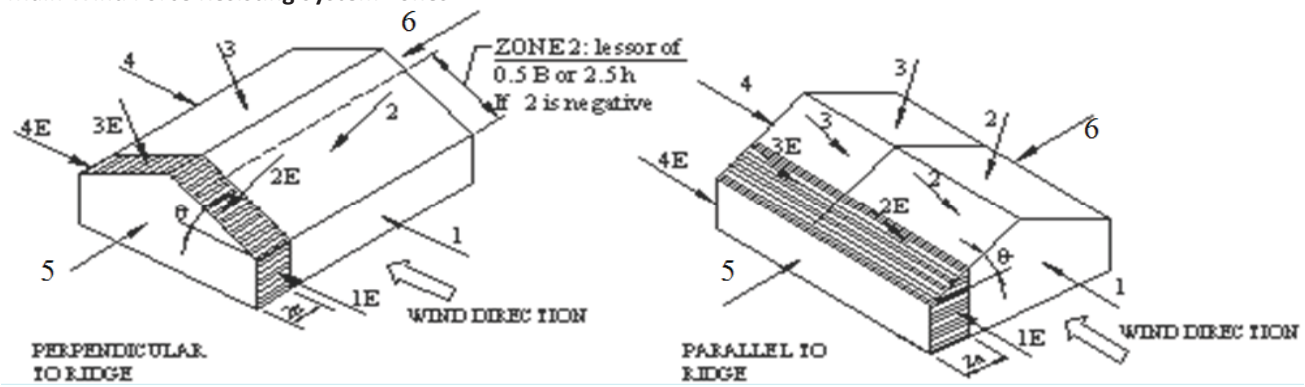
Wind Loads

Main Wind Force Resisting System				
	Wind Surface Pressure			
Zone	Transverse Direction		Longitudinal Direction	
1	11.19 psf	5.40 psf	9.32 psf	3.53 psf
2	-8.19 psf	-13.97 psf	-8.19 psf	-13.97 psf
3	-4.63 psf	-10.42 psf	-3.05 psf	-8.83 psf
4	-3.78 psf	-9.56 psf	-1.77 psf	-7.55 psf
5	-4.34 psf	-10.12 psf	-4.34 psf	-10.12 psf
6	-4.34 psf	-10.12 psf	-4.34 psf	-10.12 psf
1E	15.42 psf	9.64 psf	12.69 psf	6.91 psf
2E	-14.29 psf	-20.08 psf	-14.29 psf	-20.08 psf
3E	-7.92 psf	-13.70 psf	-5.62 psf	-11.40 psf
4E	-7.04 psf	-12.82 psf	-4.02 psf	-9.80 psf

6.50 ft Dimension a

Zone diagrams follow

Main Wind Force Resisting System Zones



Strength Design Load Combinations for member size design

16-1	1.4(D)
16-2	1.2(D) + 1.6(L) + 0.5(Lr or S)
16-3	1.2(D) + 1.6(Lr or S) + 0.5(L or 0.8W)
16-4	1.2(D) + 1.6(W) + L + 0.5(Lr or S)
16-5	1.2(D) + 1.0(E) + L + 0.2(S)
16-6	0.9(D) + 1.6(W)
16-7	0.9(D) + 1.0(E)

Roof live load controls over snow load. The "S" Load will be omitted

Allowable Stress Design load combinations are used for footing size check and building deflection checks.

16-10	D + Lr
16-12a	D + (W)
16-12b	D + (0.7E)
16-13a	D + 0.75(0.7E) + 0.75(Lr)
16-13b	D + 0.75(W) + 0.75(Lr)
16-14	0.6(D) + W
16-15	0.6(D) + 0.7(E)

The above load combinations are plugged into the analysis model and used to check the design of the structure

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Subject:	CIC Detachment 10-15 - Ft. Drum NY Load Calc. for RISA Input	*Page:*	of
		Made by:	Corwith, Travis
		Date:	20-Mar-2012
		Checked by:	
		Date:	

173133C

Roof Gravity Load:

Auto	Structural Dead Load (Self Weight)
37.9 psf	SI DL
58.8 psf	SL

**Note: The SI-DL includes an allowance for the truss and steel deck weight which are not included in the self weight for the RISA model*

Seismic Load:

14.00 ft	Eave Ht
7.00 ft	Wall half Height
55.0 psf	Wall Weight (CFS studs, wall board, bricks)
385.0 plf	Load around perimeter

385.3 plf	***DL (exterior Beam - Lines A, D)***
770.5 plf	***DL (Interior Beam - Lines B, C)***
597.7 plf	***LL (exterior Beam - Lines A, D)***
1195.4 plf	***LL (Interior Beam - Lines B, C)***

Building Dimensions:

161.67 ft	Length
65.00 ft	Width
10,508 ft²	Area
453.33 ft	Perimeter
14.00 ft	Eave Elevation
21.00 ft	Average Roof Elevation

Total Seismic Loading:

40.00 k	Superstructure Self Weight (From RISA)
521.84 k	SI DL Weight (used to calculate seismic load for Equivalent Lateral Force Procedure)
174.53 k	Wall Weight
736.38 k	Sum of Seismic Dead Load
0.1040W	Seismic Base Shear Factor
76.58 k	***Seismic Load (applied at eave elevation as approximate center of mass of the roof level)***

Note: In Accordance with ASCE 7-05 Section 12.7.2 Sub-Section 4; 20% of the design snow load is added to the SI DL seismic weight

Seismic loads are applied to the model at the approximate center of mass . RISA3D cannot model a flexible diaphragm (without the RISAFloor Module), but for this building, a rigid diaphragm will provide similar results. Therefore, the load is applied to the diaphragm as close to the center of rigidity as possible to prevent torsional effects (To accomplish this a joint is added to the diaphragm at the geometric centroid)

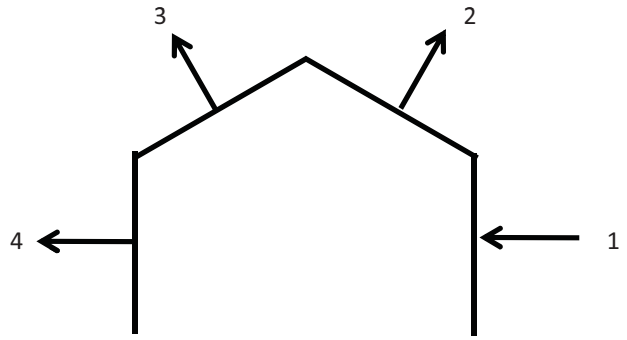
Wind Load

1 The horizontal component of the wind load on the sloped roof nearly cancels out at the two sloped sides and is therefore neglected from this calculation for 30% level design

2 The vertical component of the wind load is included for the member check

Transverse Wind Loading (Zone 1 + 4; Longitudinal Case)

65.00 ft	Width
7.00 ft	Height (Wall only)
6.50 ft	Edge Length
13.00 ft	Edge Width
52.00 ft	Non-Edge Width
16.7 psf	Edge Load (Sum of each face)
11.1 psf	Non-Edge Load (Sum of each face)
91 ft²	Edge Area
364 ft²	Non-Edge Area
5.55 k	***Total Transverse Wind Load***
65.00 ft	*Building Transverse Width*
0.09 klf	***Uniform Load applied at the eave normal to Grid 1 or 9***



Longitudinal Wind Loading (Zone 1 + 4; Transverse Case)

161.67 ft	Width
7.00 ft	Height (Wall only)
6.50 ft	Edge Length
13.00 ft	Edge Width
148.67 ft	Non-Edge Width
22.5 psf	Edge Load (Sum of each face)
15.0 psf	Non-Edge Load (Sum of each face)
91 ft²	Edge Area
1,041 ft²	Non-Edge Area
17.62 k	***Total Longitudinal Wind Load***
161.67 ft	*Building Longitudinal Width*
0.11 klf	***Uniform Load applied at the eave normal to Grid A or D***

Uplift

5.00 ft	Roof Overhang
65.00 ft	Building Width
161.67 ft	Building Length
4:12	Roof Slope
1.05	Roof Area Modification Factor
13,571 ft²	Roof Area (Modified)
14.5 psf	***Uplift Load (Vertical Component of the average of Zone 2 and 3)***
197.36 k	***Total Uplift Load***
0.22 klf	***Uplift (exterior Beam - Lines A, D)***
0.30 klf	***Uplift (Interior Beam - Lines B, C)***

RISA Model

CIC – Detachment 10-15; Ft. Drum, New York

Global

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation	Yes
Include Warping	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Vertical Axis	Z
Global Member Orientation Plane	XY

Hot Rolled Steel Code	AISC 13th(360-05): LRFD (Direct Analysis Method)
Cold Formed Steel Code	AISI NAS-07: ASD
Wood Code	AF&PA NDS-05/08: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-08
Masonry Code	ACI 530-05/08: ASD
Aluminum Code	AA ADM1-05: ASD

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections	Yes
Bad Framing Warnings	No
Unused Force Warnings	Yes

Seismic Code	ASCE 7-05
Seismic Base Elevation (ft)	Not Entered
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
Ca	.36
Cv	.54
Nv	1
SD1	1
SDS	1
S1	1
TL (sec)	5
Occupancy Code	4
Seismic Zone	3
Occupancy Cat	I or II
Use Gravity Self Wt in Diaphragm Mass	Yes
Use Deck Self Wt in Diaphragm Mass	Yes
Use Lateral Self Wt in Diaphragm Mass	Yes
Seismic Detailing Code	None
Om X	1
Om Z	1
Rho X	1
Rho Z	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E..Density[k/ft...		Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.4	58	1.3
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.4	58	1.3

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	C1	N37	N1			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
2	C2	N39	N10			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
3	C3	N41	N19			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
4	C4	N43	N28			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
5	C5	N45	N2			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
6	C6	N47	N11			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
7	C7	N49	N20			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
8	C8	N51	N29			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
9	C9	N53	N3			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
10	C10	N55	N12			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
11	C11	N57	N21			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
12	C12	N59	N30			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
13	C13	N61	N4			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
14	C14	N63	N13			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
15	C15	N65	N22			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
16	C16	N67	N31			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
17	C17	N69	N5			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
18	C18	N71	N14			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
19	C19	N73	N23			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
20	C20	N75	N32			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
21	C21	N77	N6			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
22	C22	N79	N15			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
23	C23	N81	N24			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
24	C24	N83	N33			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
25	C25	N85	N7			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
26	C26	N87	N16			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
27	C27	N89	N25			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
28	C28	N91	N34			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
29	C29	N93	N8			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
30	C30	N95	N17			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
31	C31	N97	N26			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
32	C32	N99	N35			HSS6X6X4	Column	Tube	A500 Gr.46	Typical
33	M1	N28	N19			W16X31	Beam	Wide Flange	A992	Typical
34	M2	N19	N10			W16X31	Beam	Wide Flange	A992	Typical
35	M3	N10	N1			W16X31	Beam	Wide Flange	A992	Typical
36	M4	N29	N20			W12X16	Beam	Wide Flange	A992	Typical
37	M5	N20	N11			W12X16	Beam	Wide Flange	A992	Typical
38	M6	N11	N2			W12X16	Beam	Wide Flange	A992	Typical
39	M7	N30	N21			W12X16	Beam	Wide Flange	A992	Typical
40	M8	N21	N12			W12X16	Beam	Wide Flange	A992	Typical
41	M9	N12	N3			W12X16	Beam	Wide Flange	A992	Typical
42	M10	N31	N22			W12X16	Beam	Wide Flange	A992	Typical
43	M11	N22	N13			W12X16	Beam	Wide Flange	A992	Typical
44	M12	N13	N4			W12X16	Beam	Wide Flange	A992	Typical
45	M13	N32	N23			W12X16	Beam	Wide Flange	A992	Typical
46	M14	N23	N14			W12X16	Beam	Wide Flange	A992	Typical
47	M15	N14	N5			W12X16	Beam	Wide Flange	A992	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
48	M16	N33	N24			W12X16	Beam	Wide Flange	A992	Typical
49	M17	N24	N15			W12X16	Beam	Wide Flange	A992	Typical
50	M18	N15	N6			W12X16	Beam	Wide Flange	A992	Typical
51	M19	N34	N25			W12X16	Beam	Wide Flange	A992	Typical
52	M20	N25	N16			W12X16	Beam	Wide Flange	A992	Typical
53	M21	N16	N7			W12X16	Beam	Wide Flange	A992	Typical
54	M22	N35	N26			W16X31	Beam	Wide Flange	A992	Typical
55	M23	N26	N66			W16X31	Beam	Wide Flange	A992	Typical
56	M24	N17	N8			W16X31	Beam	Wide Flange	A992	Typical
57	M25	N1	N2			W16X31	Beam	Wide Flange	A992	Typical
58	M26	N2	N3			W16X31	Beam	Wide Flange	A992	Typical
59	M27	N3	N4			W16X31	Beam	Wide Flange	A992	Typical
60	M28	N4	N5			W16X31	Beam	Wide Flange	A992	Typical
61	M29	N5	N6			W16X31	Beam	Wide Flange	A992	Typical
62	M30	N6	N7			W16X31	Beam	Wide Flange	A992	Typical
63	M31	N7	N8			W16X31	Beam	Wide Flange	A992	Typical
64	M32	N10	N11			W18X35	Beam	Wide Flange	A992	Typical
65	M33	N11	N12			W18X35	Beam	Wide Flange	A992	Typical
66	M34	N12	N13			W18X35	Beam	Wide Flange	A992	Typical
67	M35	N13	N14			W18X35	Beam	Wide Flange	A992	Typical
68	M36	N15	N16			W18X35	Beam	Wide Flange	A992	Typical
69	M37	N16	N17			W18X35	Beam	Wide Flange	A992	Typical
70	M38	N19	N20			W18X35	Beam	Wide Flange	A992	Typical
71	M39	N20	N21			W18X35	Beam	Wide Flange	A992	Typical
72	M40	N21	N22			W18X35	Beam	Wide Flange	A992	Typical
73	M41	N22	N23			W18X35	Beam	Wide Flange	A992	Typical
74	M42	N24	N25			W18X35	Beam	Wide Flange	A992	Typical
75	M43	N25	N26			W18X35	Beam	Wide Flange	A992	Typical
76	M44	N28	N29			W16X31	Beam	Wide Flange	A992	Typical
77	M45	N29	N30			W16X31	Beam	Wide Flange	A992	Typical
78	M46	N30	N31			W16X31	Beam	Wide Flange	A992	Typical
79	M47	N31	N32			W16X31	Beam	Wide Flange	A992	Typical
80	M48	N32	N33			W16X31	Beam	Wide Flange	A992	Typical
81	M49	N33	N34			W16X31	Beam	Wide Flange	A992	Typical
82	M50	N34	N35			W16X31	Beam	Wide Flange	A992	Typical
83	M51	N24	N23			W18X35	Beam	Wide Flange	A992	Typical
84	M52	N15	N14			W18X35	Beam	Wide Flange	A992	Typical
85	B1	N37	N2			HSS5X5X4	VBrace	Tube	A572 Gr.50	Typical
86	B2	N19	N39			HSS4X4X4	VBrace	Tube	A572 Gr.50	Typical
87	B3	N12	N63			HSS4.5X4.5X4	VBrace	Tube	A572 Gr.50	Typical
88	B4	N22	N73			HSS4.5X4.5X4	VBrace	Tube	A572 Gr.50	Typical
89	B5	N23	N71			HSS4X4X4	VBrace	Tube	A572 Gr.50	Typical
90	B6	N97	N66			HSS4X4X4	VBrace	Tube	A572 Gr.50	Typical
91	B7	N66	N95			HSS4X4X4	VBrace	Tube	A572 Gr.50	Typical
92	M53	N66	N17			W16X31	Beam	Wide Flange	A992	Typical
93	B8	N51	N28			HSS4.5X4.5X4	VBrace	Tube	A572 Gr.50	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	TOM	Inactive	Seismic Design ...
1	C1						Yes			None
2	C2						Yes			None
3	C3						Yes			None
4	C4						Yes			None
5	C5						Yes			None
6	C6						Yes			None
7	C7						Yes			None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	TOM	Inactive	Seismic Design ...
8	C8						Yes			None
9	C9						Yes			None
10	C10						Yes			None
11	C11						Yes			None
12	C12						Yes			None
13	C13						Yes			None
14	C14						Yes			None
15	C15						Yes			None
16	C16						Yes			None
17	C17						Yes			None
18	C18						Yes			None
19	C19						Yes			None
20	C20						Yes			None
21	C21						Yes			None
22	C22						Yes			None
23	C23						Yes			None
24	C24						Yes			None
25	C25						Yes			None
26	C26						Yes			None
27	C27						Yes			None
28	C28						Yes			None
29	C29						Yes			None
30	C30						Yes			None
31	C31						Yes			None
32	C32						Yes			None
33	M1	BenPIN	BenPIN				Yes			None
34	M2	BenPIN	BenPIN				Yes			None
35	M3	BenPIN	BenPIN				Yes			None
36	M4	BenPIN	BenPIN				Yes			None
37	M5	BenPIN	BenPIN				Yes			None
38	M6	BenPIN	BenPIN				Yes			None
39	M7	BenPIN	BenPIN				Yes			None
40	M8	BenPIN	BenPIN				Yes			None
41	M9	BenPIN	BenPIN				Yes			None
42	M10	BenPIN	BenPIN				Yes			None
43	M11	BenPIN	BenPIN				Yes			None
44	M12	BenPIN	BenPIN				Yes			None
45	M13	BenPIN	BenPIN				Yes			None
46	M14	BenPIN	BenPIN				Yes			None
47	M15	BenPIN	BenPIN				Yes			None
48	M16	BenPIN	BenPIN				Yes			None
49	M17	BenPIN	BenPIN				Yes			None
50	M18	BenPIN	BenPIN				Yes			None
51	M19	BenPIN	BenPIN				Yes			None
52	M20	BenPIN	BenPIN				Yes			None
53	M21	BenPIN	BenPIN				Yes			None
54	M22	BenPIN	BenPIN				Yes			None
55	M23	BenPIN					Yes			None
56	M24	BenPIN	BenPIN				Yes			None
57	M25	BenPIN	BenPIN				Yes			None
58	M26	BenPIN	BenPIN				Yes			None
59	M27	BenPIN	BenPIN				Yes			None
60	M28	BenPIN	BenPIN				Yes			None
61	M29	BenPIN	BenPIN				Yes			None
62	M30	BenPIN	BenPIN				Yes			None
63	M31	BenPIN	BenPIN				Yes			None
64	M32	BenPIN	BenPIN				Yes			None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	TOM	Inactive	Seismic Design ...
65	M33	BenPIN	BenPIN				Yes			None
66	M34	BenPIN	BenPIN				Yes			None
67	M35	BenPIN	BenPIN				Yes			None
68	M36	BenPIN	BenPIN				Yes			None
69	M37	BenPIN	BenPIN				Yes			None
70	M38	BenPIN	BenPIN				Yes			None
71	M39	BenPIN	BenPIN				Yes			None
72	M40	BenPIN	BenPIN				Yes			None
73	M41	BenPIN	BenPIN				Yes			None
74	M42	BenPIN	BenPIN				Yes			None
75	M43	BenPIN	BenPIN				Yes			None
76	M44	BenPIN	BenPIN				Yes			None
77	M45	BenPIN	BenPIN				Yes			None
78	M46	BenPIN	BenPIN				Yes			None
79	M47	BenPIN	BenPIN				Yes			None
80	M48	BenPIN	BenPIN				Yes			None
81	M49	BenPIN	BenPIN				Yes			None
82	M50	BenPIN	BenPIN				Yes			None
83	M51	BenPIN	BenPIN				Yes			None
84	M52	BenPIN	BenPIN				Yes			None
85	B1	BenPIN	BenPIN				Yes			None
86	B2	BenPIN	BenPIN				Yes			None
87	B3	BenPIN	BenPIN				Yes			None
88	B4	BenPIN	BenPIN				Yes			None
89	B5	BenPIN	BenPIN				Yes			None
90	B6	BenPIN	BenPIN				Yes			None
91	B7	BenPIN	BenPIN				Yes			None
92	M53		BenPIN				Yes			None
93	B8	BenPIN	BenPIN				Yes			None

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N1	0	61	12.583333	0	
2	N2	22.5	61	12.583333	0	
3	N3	45.166667	61	12.583333	0	
4	N4	67.833333	61	12.583333	0	
5	N5	90.5	61	12.583333	0	
6	N6	113.166667	61	12.583333	0	
7	N7	135.833333	61	12.583333	0	
8	N8	158.333333	61	12.583333	0	
9	N10	0	40.666667	12.583333	0	
10	N11	22.5	40.666667	12.583333	0	
11	N12	45.166667	40.666667	12.583333	0	
12	N13	67.833333	40.666667	12.583333	0	
13	N14	90.5	40.666667	12.583333	0	
14	N15	113.166667	40.666667	12.583333	0	
15	N16	135.833333	40.666667	12.583333	0	
16	N17	158.333333	40.666667	12.583333	0	
17	N19	0	20.333333	12.583333	0	
18	N20	22.5	20.333333	12.583333	0	
19	N21	45.166667	20.333333	12.583333	0	
20	N22	67.833333	20.333333	12.583333	0	
21	N23	90.5	20.333333	12.583333	0	
22	N24	113.166667	20.333333	12.583333	0	
23	N25	135.833333	20.333333	12.583333	0	
24	N26	158.333333	20.333333	12.583333	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
25	N28	0	0	12.583333	0	
26	N29	22.5	0	12.583333	0	
27	N30	45.166667	0	12.583333	0	
28	N31	67.833333	0	12.583333	0	
29	N32	90.5	0	12.583333	0	
30	N33	113.166667	0	12.583333	0	
31	N34	135.833333	0	12.583333	0	
32	N35	158.333333	0	12.583333	0	
33	N37	0	61	-0.666666	0	
34	N39	0	40.667	-0.666666	0	
35	N41	0	20.333	-0.666666	0	
36	N43	0	0	-.667	0	
37	N45	22.5	61	-0.666666	0	
38	N47	22.5	40.666667	-1.5	0	
39	N49	22.5	20.333333	-1.5	0	
40	N51	22.5	0	-0.666666	0	
41	N53	45.167	61	-0.666666	0	
42	N55	45.166667	40.666667	-1.5	0	
43	N57	45.166667	20.333333	-1.5	0	
44	N59	45.167	0	-0.666666	0	
45	N61	67.833	61	-0.666666	0	
46	N63	67.833333	40.666667	-1.5	0	
47	N65	67.833333	20.333333	-1.5	0	
48	N67	67.833	0	-0.666666	0	
49	N69	90.5	61	-0.666666	0	
50	N71	90.5	40.666667	-1.5	0	
51	N73	90.5	20.333333	-1.5	0	
52	N75	90.5	0	-0.666666	0	
53	N77	113.167	61	-0.666666	0	
54	N79	113.166667	40.666667	-1.5	0	
55	N81	113.166667	20.333333	-1.5	0	
56	N83	113.167	0	-0.666666	0	
57	N85	135.833	61	-0.666666	0	
58	N87	135.833333	40.666667	-1.5	0	
59	N89	135.833333	20.333333	-1.5	0	
60	N91	135.833	0	-0.666666	0	
61	N93	158.333	61	-0.666666	0	
62	N95	158.333	40.667	-0.666666	0	
63	N97	158.333	20.333	-0.666666	0	
64	N99	158.333	0	-.667	0	
65	N1000	87.25	30.5	12.583333	0	
66	N66	158.333333	30.5	12.583333	0	

Hot Rolled Steel Design Parameters

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp b...	Kyy	Kzz	Cm-yy	Cm-zz	Cb	y sway	z sway	Function
1	C1	HSS6X6...	13.25												Lateral
2	C2	HSS6X6...	13.25												Lateral
3	C3	HSS6X6...	13.25												Lateral
4	C4	HSS6X6...	13.25												Lateral
5	C5	HSS6X6...	13.25												Lateral
6	C6	HSS6X6...	14.083												Lateral
7	C7	HSS6X6...	14.083												Lateral
8	C8	HSS6X6...	13.25												Lateral
9	C9	HSS6X6...	13.25												Lateral
10	C10	HSS6X6...	14.083												Lateral
11	C11	HSS6X6...	14.083												Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp b...	Kyy	Kzz	Cm-yy	Cm-zz	Cb	y sway	z sway	Function
12	C12	HSS6X6...	13.25												Lateral
13	C13	HSS6X6...	13.25												Lateral
14	C14	HSS6X6...	14.083												Lateral
15	C15	HSS6X6...	14.083												Lateral
16	C16	HSS6X6...	13.25												Lateral
17	C17	HSS6X6...	13.25												Lateral
18	C18	HSS6X6...	14.083												Lateral
19	C19	HSS6X6...	14.083												Lateral
20	C20	HSS6X6...	13.25												Lateral
21	C21	HSS6X6...	13.25												Lateral
22	C22	HSS6X6...	14.083												Lateral
23	C23	HSS6X6...	14.083												Lateral
24	C24	HSS6X6...	13.25												Lateral
25	C25	HSS6X6...	13.25												Lateral
26	C26	HSS6X6...	14.083												Lateral
27	C27	HSS6X6...	14.083												Lateral
28	C28	HSS6X6...	13.25												Lateral
29	C29	HSS6X6...	13.25												Lateral
30	C30	HSS6X6...	13.25												Lateral
31	C31	HSS6X6...	13.25												Lateral
32	C32	HSS6X6...	13.25												Lateral
33	M1	W16X31	20.333												Lateral
34	M2	W16X31	20.333												Lateral
35	M3	W16X31	20.333												Lateral
36	M4	W12X16	20.333												Lateral
37	M5	W12X16	20.333												Lateral
38	M6	W12X16	20.333												Lateral
39	M7	W12X16	20.333												Lateral
40	M8	W12X16	20.333												Lateral
41	M9	W12X16	20.333												Lateral
42	M10	W12X16	20.333												Lateral
43	M11	W12X16	20.333												Lateral
44	M12	W12X16	20.333												Lateral
45	M13	W12X16	20.333												Lateral
46	M14	W12X16	20.333												Lateral
47	M15	W12X16	20.333												Lateral
48	M16	W12X16	20.333												Lateral
49	M17	W12X16	20.333												Lateral
50	M18	W12X16	20.333												Lateral
51	M19	W12X16	20.333												Lateral
52	M20	W12X16	20.333												Lateral
53	M21	W12X16	20.333												Lateral
54	M22	W16X31	20.333												Lateral
55	M23	W16X31	10.167												Lateral
56	M24	W16X31	20.333												Lateral
57	M25	W16X31	22.5			5.75	11.25								Lateral
58	M26	W16X31	22.667			5.75	11.33								Lateral
59	M27	W16X31	22.667			5.75	11.33								Lateral
60	M28	W16X31	22.667			5.75	11.33								Lateral
61	M29	W16X31	22.667			5.75	11.33								Lateral
62	M30	W16X31	22.667			5.75	11.33								Lateral
63	M31	W16X31	22.5			5.75	11.25								Lateral
64	M32	W18X35	22.5			5.75	11.25								Lateral
65	M33	W18X35	22.667			5.75	11.33								Lateral
66	M34	W18X35	22.667			5.75	11.33								Lateral
67	M35	W18X35	22.667			5.75	11.33								Lateral
68	M36	W18X35	22.667			5.75	11.33								Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp to...	Lcomp b...	Kyy	Kzz	Cm-yy	Cm-zz	Cb	y sway	z sway	Function
69	M37	W18X35	22.5			5.75	11.25								Lateral
70	M38	W18X35	22.5			5.75	11.25								Lateral
71	M39	W18X35	22.667			5.75	11.33								Lateral
72	M40	W18X35	22.667			5.75	11.33								Lateral
73	M41	W18X35	22.667			5.75	11.33								Lateral
74	M42	W18X35	22.667			5.75	11.33								Lateral
75	M43	W18X35	22.5			5.75	11.25								Lateral
76	M44	W16X31	22.5			5.75	11.25								Lateral
77	M45	W16X31	22.667			5.75	11.33								Lateral
78	M46	W16X31	22.667			5.75	11.33								Lateral
79	M47	W16X31	22.667			5.75	11.33								Lateral
80	M48	W16X31	22.667			5.75	11.33								Lateral
81	M49	W16X31	22.667			5.75	11.33								Lateral
82	M50	W16X31	22.5			5.75	11.25								Lateral
83	M51	W18X35	22.667			5.75	11.33								Lateral
84	M52	W18X35	22.667			5.75	11.33								Lateral
85	B1	HSS5X5...	26.112												Lateral
86	B2	HSS4X4...	24.27												Lateral
87	B3	HSS4.5X...	26.686												Lateral
88	B4	HSS4.5X...	26.686												Lateral
89	B5	HSS4X4...	24.734												Lateral
90	B6	HSS4X4...	16.701												Lateral
91	B7	HSS4X4...	16.701												Lateral
92	M53	W16X31	10.167												Lateral
93	B8	HSS4.5X...	26.112												Lateral

Joint Loads and Enforced Displacements (BLC 6 : Seismic Trans)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N1000	L	Y	-76.58

Joint Loads and Enforced Displacements (BLC 7 : Seismic Long)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N1000	L	X	-76.58

Joint Loads and Enforced Displacements (BLC 9 : Dead Load)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N99	L	Z	-20.57
2	N93	L	Z	-20.57
3	N43	L	Z	-20.57
4	N37	L	Z	-20.57
5	N97	L	Z	-19.49
6	N95	L	Z	-19.49
7	N41	L	Z	-19.49
8	N39	L	Z	-19.49
9	N91	L	Z	-21.73
10	N85	L	Z	-21.73
11	N51	L	Z	-21.73
12	N45	L	Z	-21.73
13	N83	L	Z	-21.81
14	N75	L	Z	-21.81
15	N67	L	Z	-21.81
16	N59	L	Z	-21.81
17	N53	L	Z	-21.81
18	N61	L	Z	-21.81
19	N69	L	Z	-21.81

Joint Loads and Enforced Displacements (BLC 9 : Dead Load) (Continued)

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
20	N77	L	Z	-21.81

Member Point Loads

Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
No Data to Print ...			

Member Distributed Loads (BLC 2 : Snow Load)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,deg]	Start Location[ft...	End Location[ft,...
1	M52	Z	-1.195	-1.195	0	0
2	M51	Z	-1.195	-1.195	0	0
3	M50	Z	-.598	-.598	0	0
4	M49	Z	-.598	-.598	0	0
5	M48	Z	-.598	-.598	0	0
6	M47	Z	-.598	-.598	0	0
7	M46	Z	-.598	-.598	0	0
8	M45	Z	-.598	-.598	0	0
9	M44	Z	-.598	-.598	0	0
10	M43	Z	-1.195	-1.195	0	0
11	M42	Z	-1.195	-1.195	0	0
12	M41	Z	-1.195	-1.195	0	0
13	M40	Z	-1.195	-1.195	0	0
14	M39	Z	-1.195	-1.195	0	0
15	M38	Z	-1.195	-1.195	0	0
16	M37	Z	-1.195	-1.195	0	0
17	M36	Z	-1.195	-1.195	0	0
18	M35	Z	-1.195	-1.195	0	0
19	M34	Z	-1.195	-1.195	0	0
20	M33	Z	-1.195	-1.195	0	0
21	M32	Z	-1.195	-1.195	0	0
22	M31	Z	-.598	-.598	0	0
23	M30	Z	-.598	-.598	0	0
24	M29	Z	-.598	-.598	0	0
25	M28	Z	-.598	-.598	0	0
26	M27	Z	-.598	-.598	0	0
27	M26	Z	-.598	-.598	0	0
28	M25	Z	-.598	-.598	0	0

Member Distributed Loads (BLC 3 : Superimposed Dead)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,deg]	Start Location[ft...	End Location[ft,...
1	M50	Z	-.385	-.385	0	0
2	M49	Z	-.385	-.385	0	0
3	M48	Z	-.385	-.385	0	0
4	M47	Z	-.385	-.385	0	0
5	M46	Z	-.385	-.385	0	0
6	M45	Z	-.385	-.385	0	0
7	M44	Z	-.385	-.385	0	0
8	M38	Z	-.771	-.771	0	0
9	M39	Z	-.771	-.771	0	0
10	M40	Z	-.771	-.771	0	0
11	M41	Z	-.771	-.771	0	0
12	M42	Z	-.771	-.771	0	0
13	M43	Z	-.771	-.771	0	0
14	M32	Z	-.771	-.771	0	0
15	M33	Z	-.771	-.771	0	0

Member Distributed Loads (BLC 3 : Superimposed Dead) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,deg]	Start Location[ft...	End Location[ft,...
16	M34	Z	-.771	-.771	0	0
17	M35	Z	-.771	-.771	0	0
18	M36	Z	-.771	-.771	0	0
19	M37	Z	-.771	-.771	0	0
20	M31	Z	-.385	-.385	0	0
21	M30	Z	-.385	-.385	0	0
22	M29	Z	-.385	-.385	0	0
23	M28	Z	-.385	-.385	0	0
24	M27	Z	-.385	-.385	0	0
25	M26	Z	-.385	-.385	0	0
26	M25	Z	-.385	-.385	0	0
27	M52	Z	-.771	-.771	0	0
28	M51	Z	-.771	-.771	0	0

Member Distributed Loads (BLC 4 : Wind Trans)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,deg]	Start Location[ft...	End Location[ft,...
1	M50	Y	.09	.09	0	0
2	M49	Y	.09	.09	0	0
3	M48	Y	.09	.09	0	0
4	M47	Y	.09	.09	0	0
5	M46	Y	.09	.09	0	0
6	M45	Y	.09	.09	0	0
7	M44	Y	.09	.09	0	0

Member Distributed Loads (BLC 5 : Wind Long)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,deg]	Start Location[ft...	End Location[ft,...
1	M3	X	.11	.11	0	0
2	M2	X	.11	.11	0	0
3	M1	X	.11	.11	0	0

Member Distributed Loads (BLC 8 : Wind Uplift)

	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,deg]	Start Location[ft...	End Location[ft,...
1	M52	Z	.3	.3	0	0
2	M51	Z	.3	.3	0	0
3	M50	Z	.22	.22	0	0
4	M49	Z	.22	.22	0	0
5	M48	Z	.22	.22	0	0
6	M47	Z	.22	.22	0	0
7	M46	Z	.22	.22	0	0
8	M45	Z	.22	.22	0	0
9	M44	Z	.22	.22	0	0
10	M43	Z	.3	.3	0	0
11	M42	Z	.3	.3	0	0
12	M41	Z	.3	.3	0	0
13	M40	Z	.3	.3	0	0
14	M39	Z	.3	.3	0	0
15	M38	Z	.3	.3	0	0
16	M37	Z	.3	.3	0	0
17	M36	Z	.3	.3	0	0
18	M35	Z	.3	.3	0	0
19	M34	Z	.3	.3	0	0
20	M33	Z	.3	.3	0	0
21	M32	Z	.3	.3	0	0
22	M31	Z	.22	.22	0	0
23	M30	Z	.22	.22	0	0
24	M29	Z	.22	.22	0	0

Member Distributed Loads (BLC 8 : Wind Uplift) (Continued)

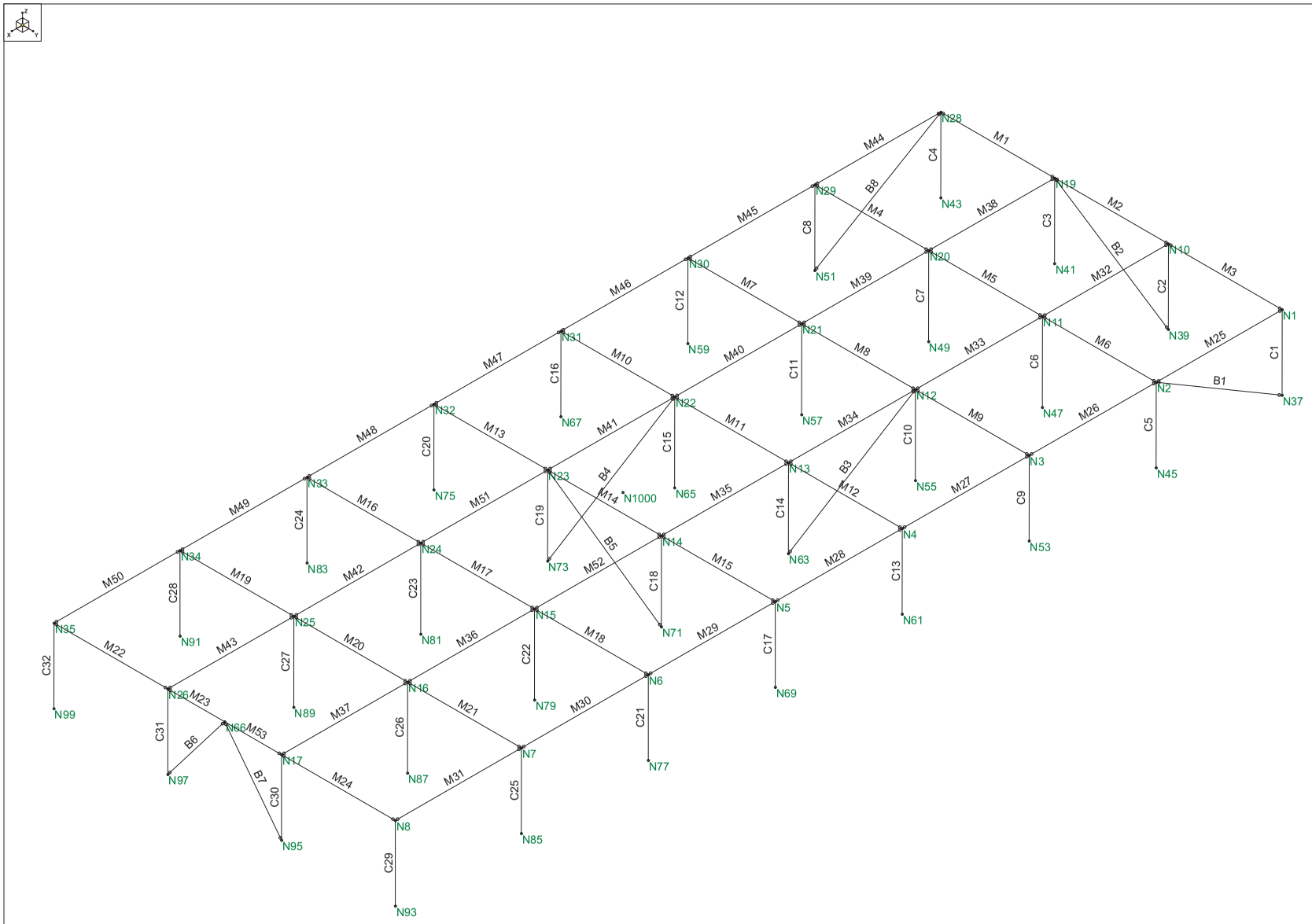
	Member Label	Direction	Start Magnitude[k/ft,deg]	End Magnitude[k/ft,deg]	Start Location[ft...	End Location[ft,...
25	M28	Z	.22	.22	0	0
26	M27	Z	.22	.22	0	0
27	M26	Z	.22	.22	0	0
28	M25	Z	.22	.22	0	0
29	C1	Z	.22	.22	0	0

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(M...	Surface...
1	Self Weight	DL			-1					
2	Snow Load	SL						28		
3	Superimposed De...	DL						28		
4	Wind Trans	WL						7		
5	Wind Long	WL						3		
6	Seismic Trans	EL				1				
7	Seismic Long	EL				1				
8	Wind Uplift	WL						29		
9	Dead Load	DL			-1	20				

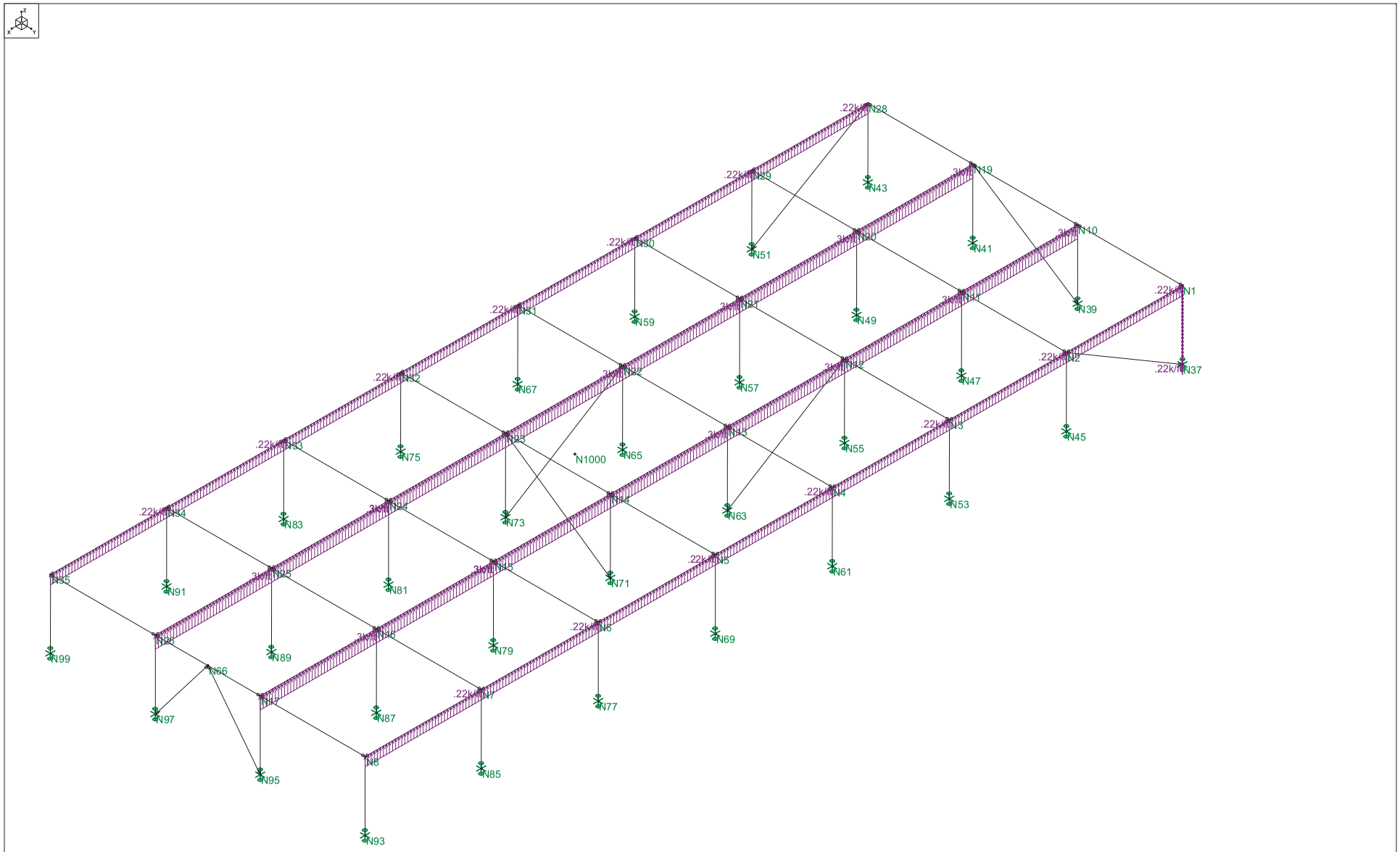
Load Combinations

	Description	Sol...	PDelta	SRSS	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	LRFD16-1	Yes	Y		DL	1.4														
2	LRFD16-2	Yes	Y		DL	1.2	SL	.5												
3	LRFD16-3a	Yes	Y		DL	1.2	SL	1.6												
4	LRFD16-3b.1	Yes	Y		DL	1.2	SL	1.6	4	.8	8	.8								
5	LRFD 16-3b.2	Yes	Y		DL	1.2	SL	1.6	5	.8	8	.8								
6	LRFD 16-4.1	Yes	Y		DL	1.2	SL	.5	4	1.6	8	1.6								
7	LRFD 16-4.2	Yes	Y		DL	1.2	SL	.5	5	1.6	8	1.6								
8	LRFD 16-5.1	Yes	Y		DL	1.2	SL	.5	6	1										
9	LRFD 16-5.2	Yes	Y		DL	1.2	SL	.5	7	1										
10	LRFD 16-6.1	Yes	Y		DL	.9	4	1.6	8	1.6										
11	LRFD 16-6.2	Yes	Y		DL	.9	5	1.6	8	1.6										
12	LRFD 16-7.1	Yes	Y		DL	.9	6	1												
13	LRFD 16-7.2	Yes	Y		DL	.9	7	1												
14	ASD 16-10	Yes			DL	1	SL	1												
15	ASD 16-12a.1	Yes			DL	1	4	1												
16	ASD 16-12a.2	Yes			DL	1	5	1												
17	ASD 16-12b.1	Yes			DL	1	6	.7												
18	ASD 16-12b.2	Yes			DL	1	7	.7												
19	ASD 16-13a.1	Yes			DL	1	SL	.75	6	.525										
20	ASD 16-13a.2	Yes			DL	1	SL	.75	7	.525										
21	ASD 16-13b.1	Yes			DL	1	SL	.75	4	.75										
22	ASD 16-13b.2	Yes			DL	1	SL	.75	5	.75										
23	ASD 16-14a.1	Yes			DL	.6	4	1	8	1										
24	ASD 16-14b.1	Yes			DL	.6	4	-1	8	1										
25	ASD 16-14a.2	Yes			DL	.6	5	1	8	1										
26	ASD 16-14b.2	Yes			DL	.6	5	-1	8	1										
27	ASD 16-15a.1	Yes			DL	.6	6	.7												
28	ASD 16-15b.1	Yes			DL	.6	6	-.7												
29	ASD 16-15a.2	Yes			DL	.6	7	.7												
30	ASD 16-15b.2	Yes			DL	.6	7	-.7												



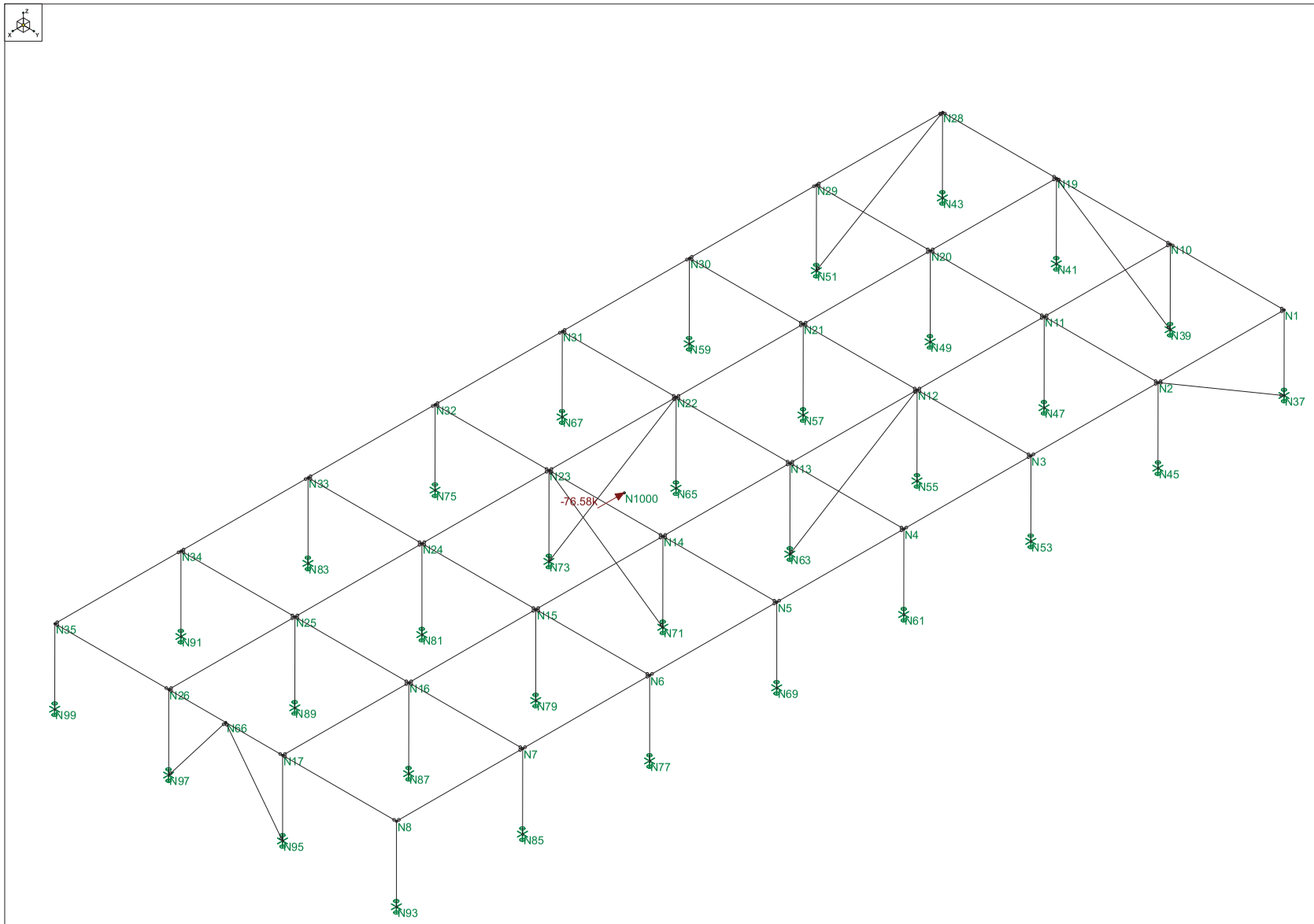
Results for LC 1, LRFD16-1

Parsons Brinckerhoff	CIC Detachment 10-15	SK - 4
T. Corwith		Apr 19, 2012 at 2:18 PM
173133		CIC Detachment 10-15 braced Frames 02-Apr-...



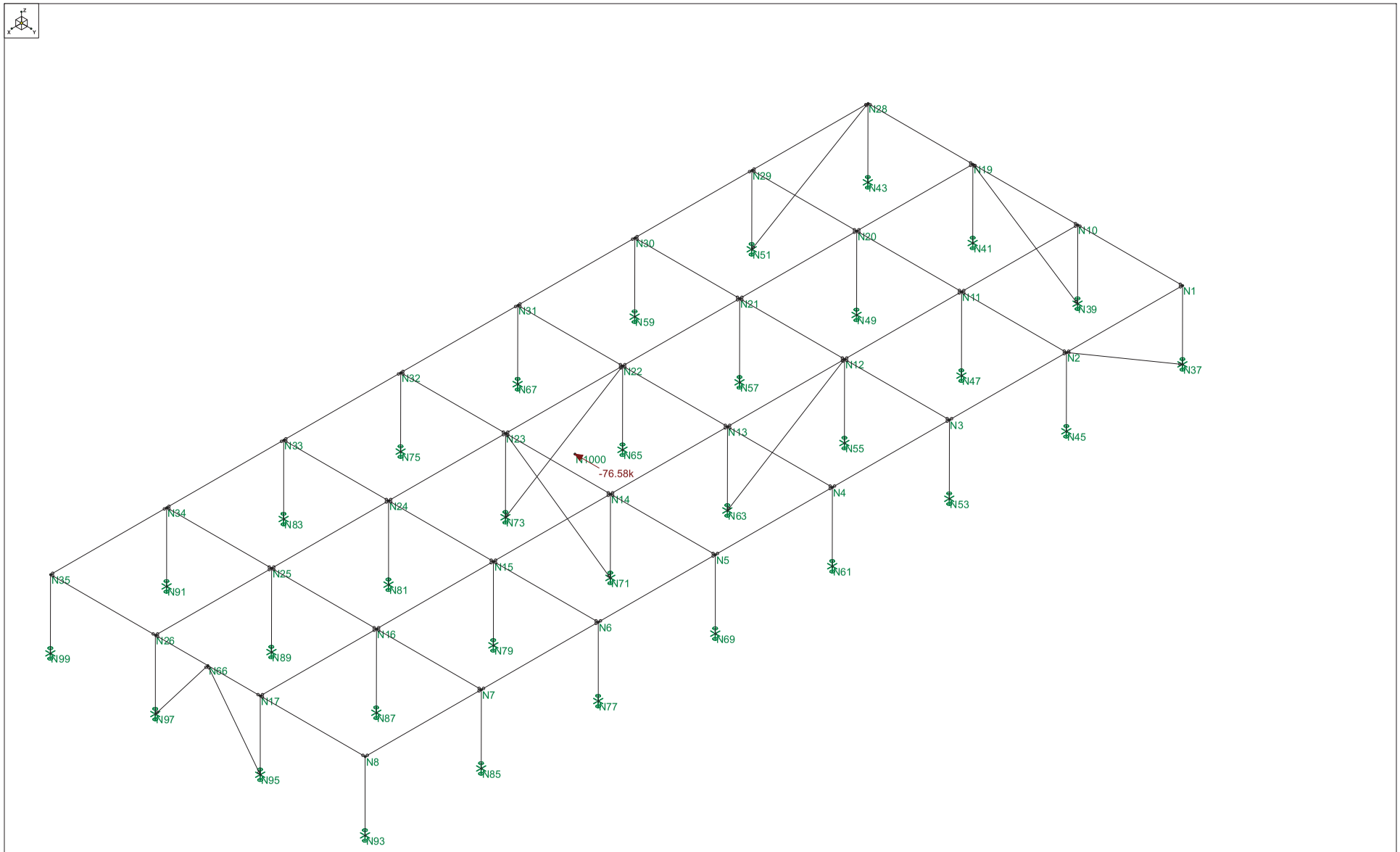
Loads: BLC 8, Wind Uplift
Results for LC 1, LRFD16-1

Parsons Brinckerhoff	CIC Detachment 10-15	SK - 15
T. Corwith		Apr 19, 2012 at 2:25 PM
173133		CIC Detachment 10-15 braced Frames 02-Apr-...



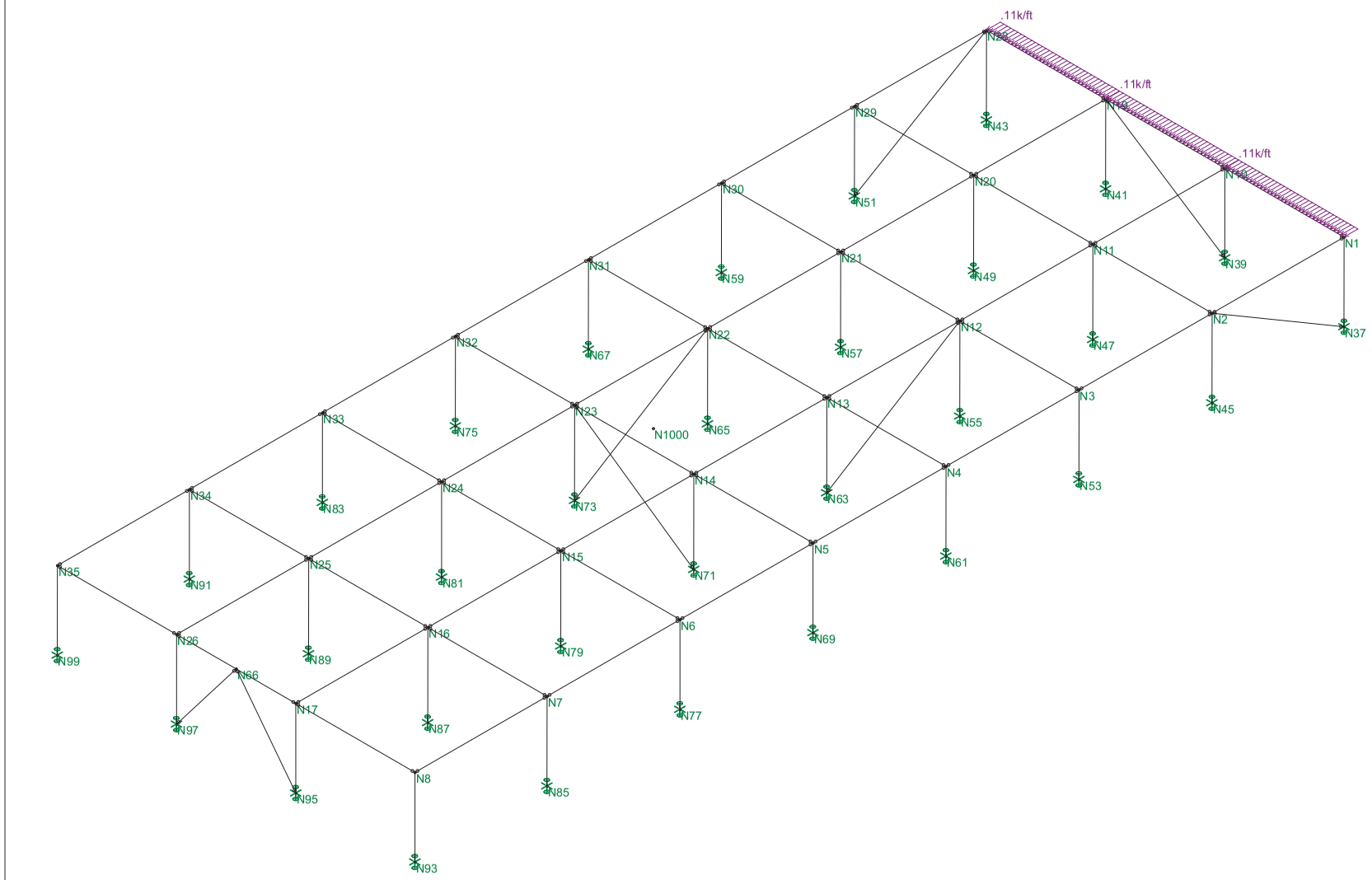
Loads: BLC 7, Seismic Long
Results for LC 1, LRFD16-1

Parsons Brinckerhoff	CIC Detachment 10-15	SK - 14
T. Corwith		Apr 19, 2012 at 2:24 PM
173133		CIC Detachment 10-15 braced Frames 02-Apr-...



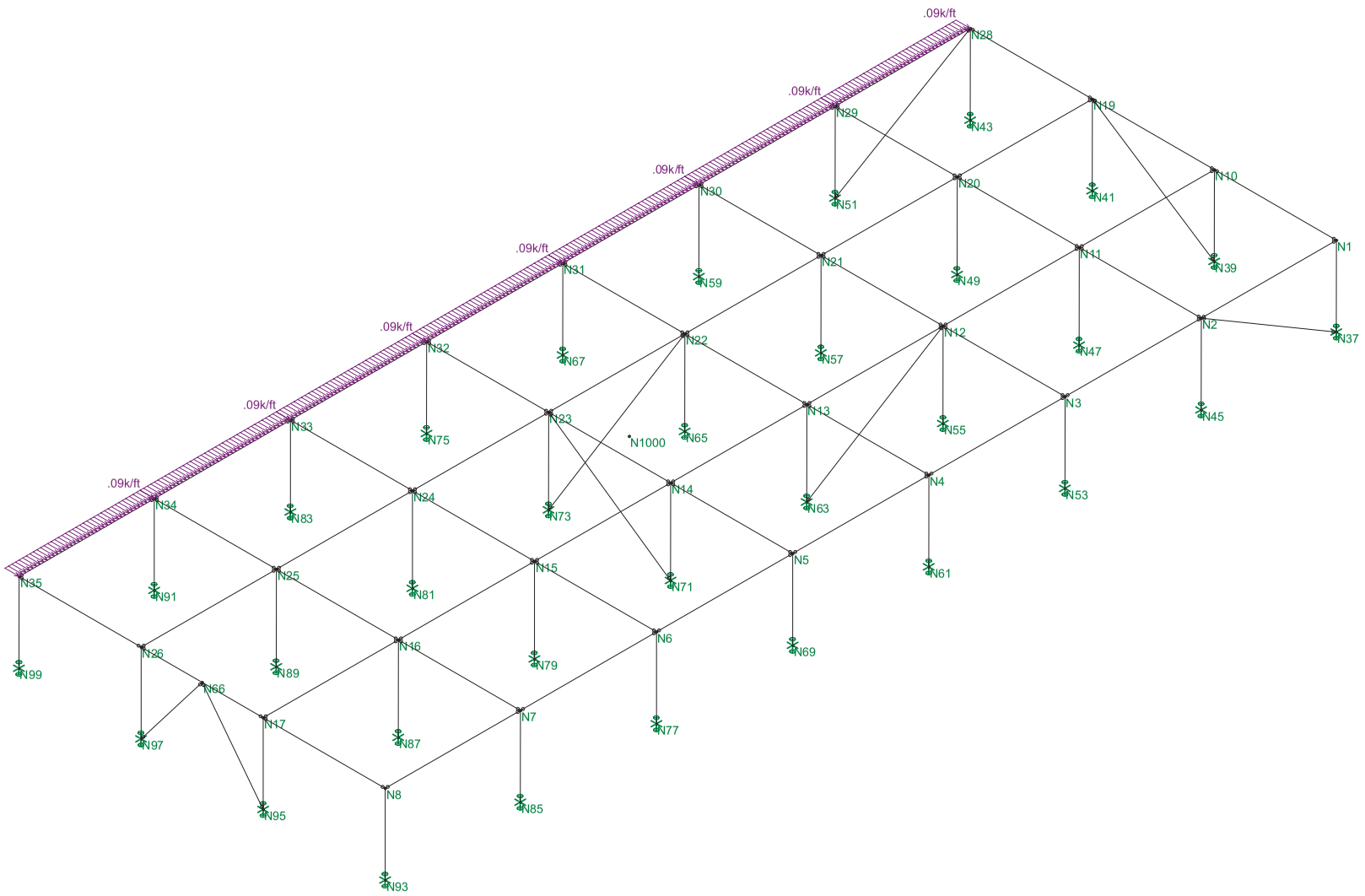
Loads: BLC 6, Seismic Trans
Results for LC 1, LRFD16-1

Parsons Brinckerhoff	CIC Detachment 10-15	SK - 13
T. Corwith		Apr 19, 2012 at 2:24 PM
173133		CIC Detachment 10-15 braced Frames 02-Apr-...



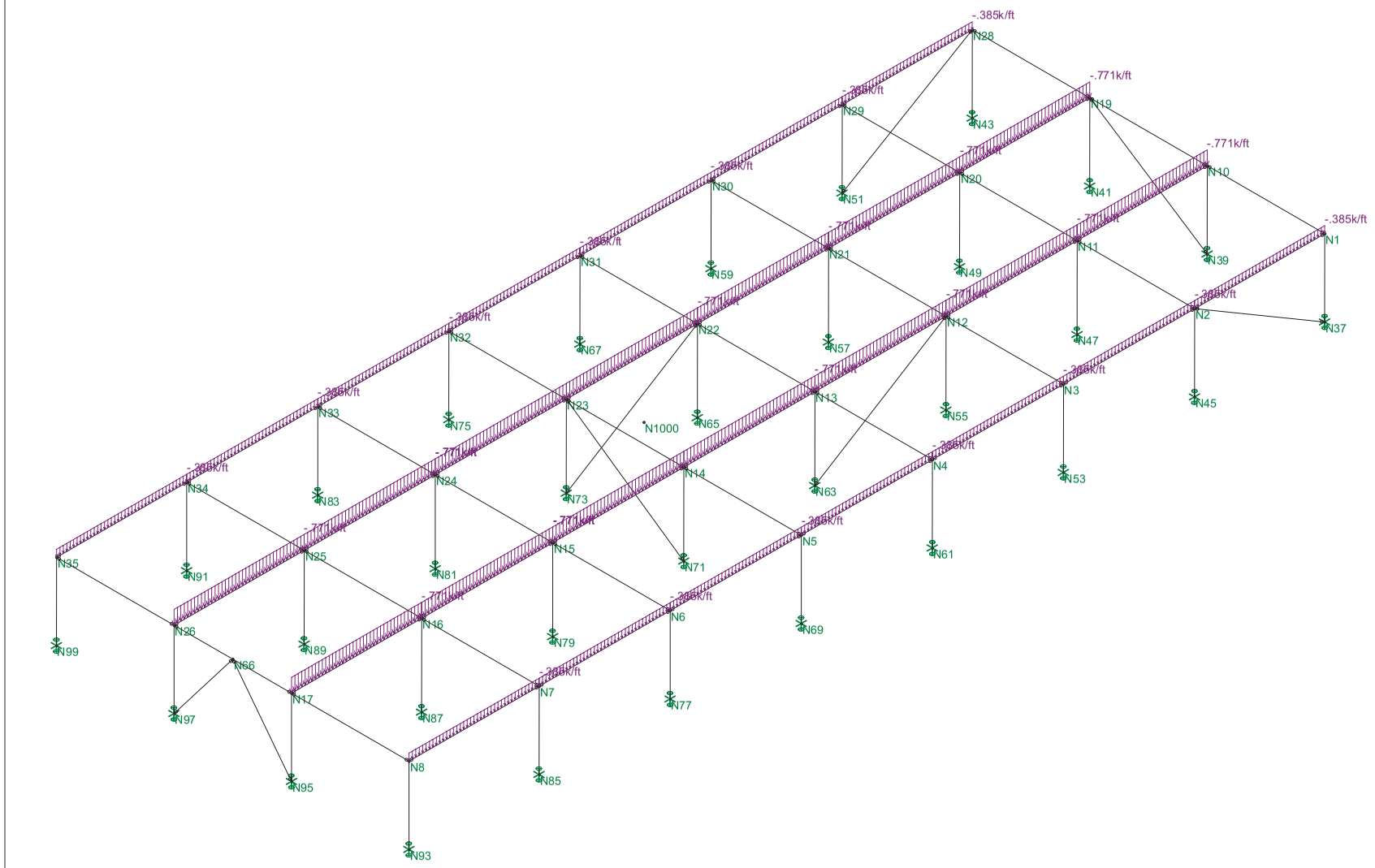
Loads: BLC 5, Wind Long
Results for LC 1, LRFD16-1

Parsons Brinckerhoff	CIC Detachment 10-15	SK - 12
T. Corwith		Apr 19, 2012 at 2:24 PM
173133		CIC Detachment 10-15 braced Frames 02-Apr-...



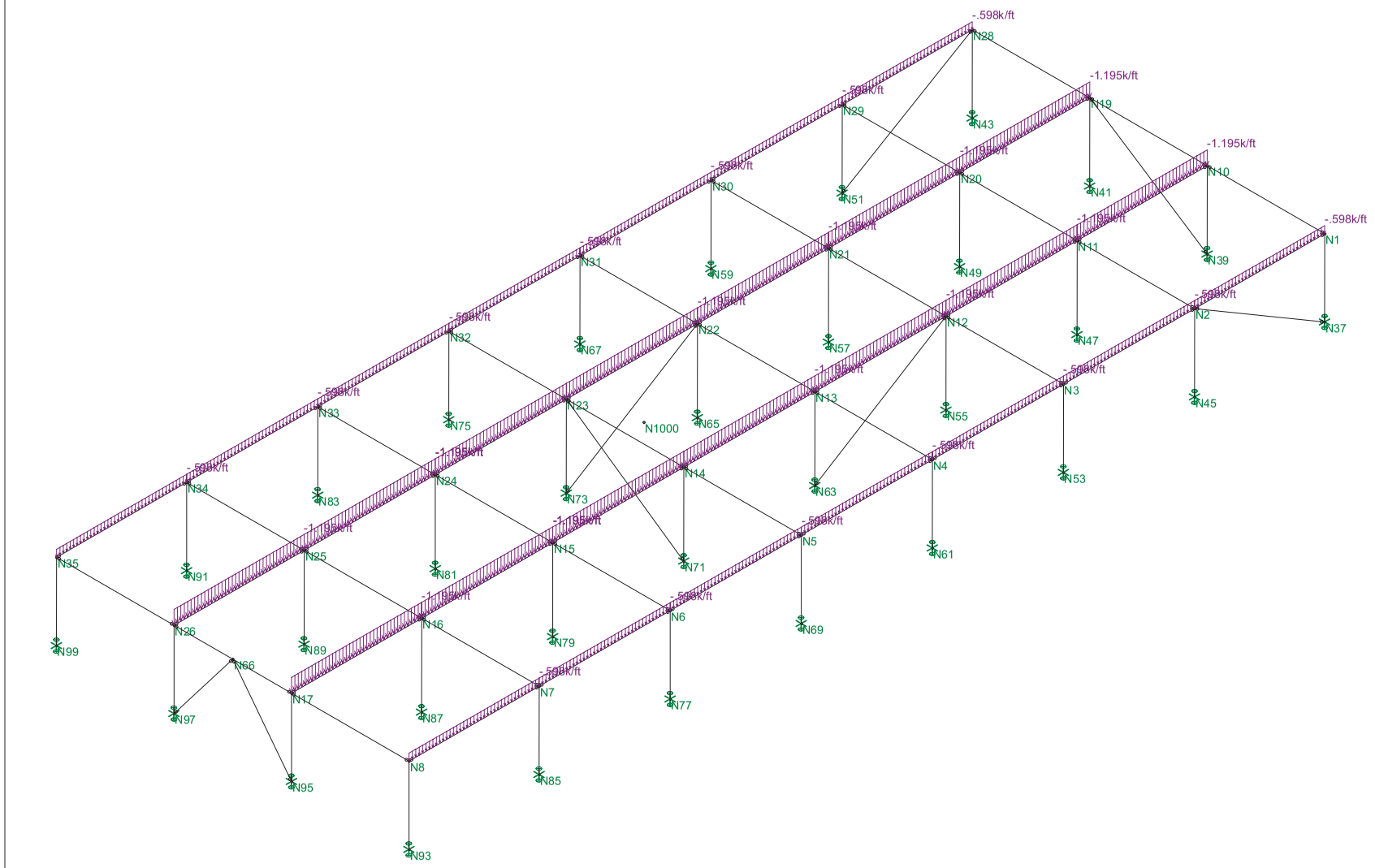
Loads: BLC 4, Wind Trans
Results for LC 1, LRFD16-1

Parsons Brinckerhoff	CIC Detachment 10-15	SK - 11
T. Corwith		Apr 19, 2012 at 2:24 PM
173133		CIC Detachment 10-15 braced Frames 02-Apr-...



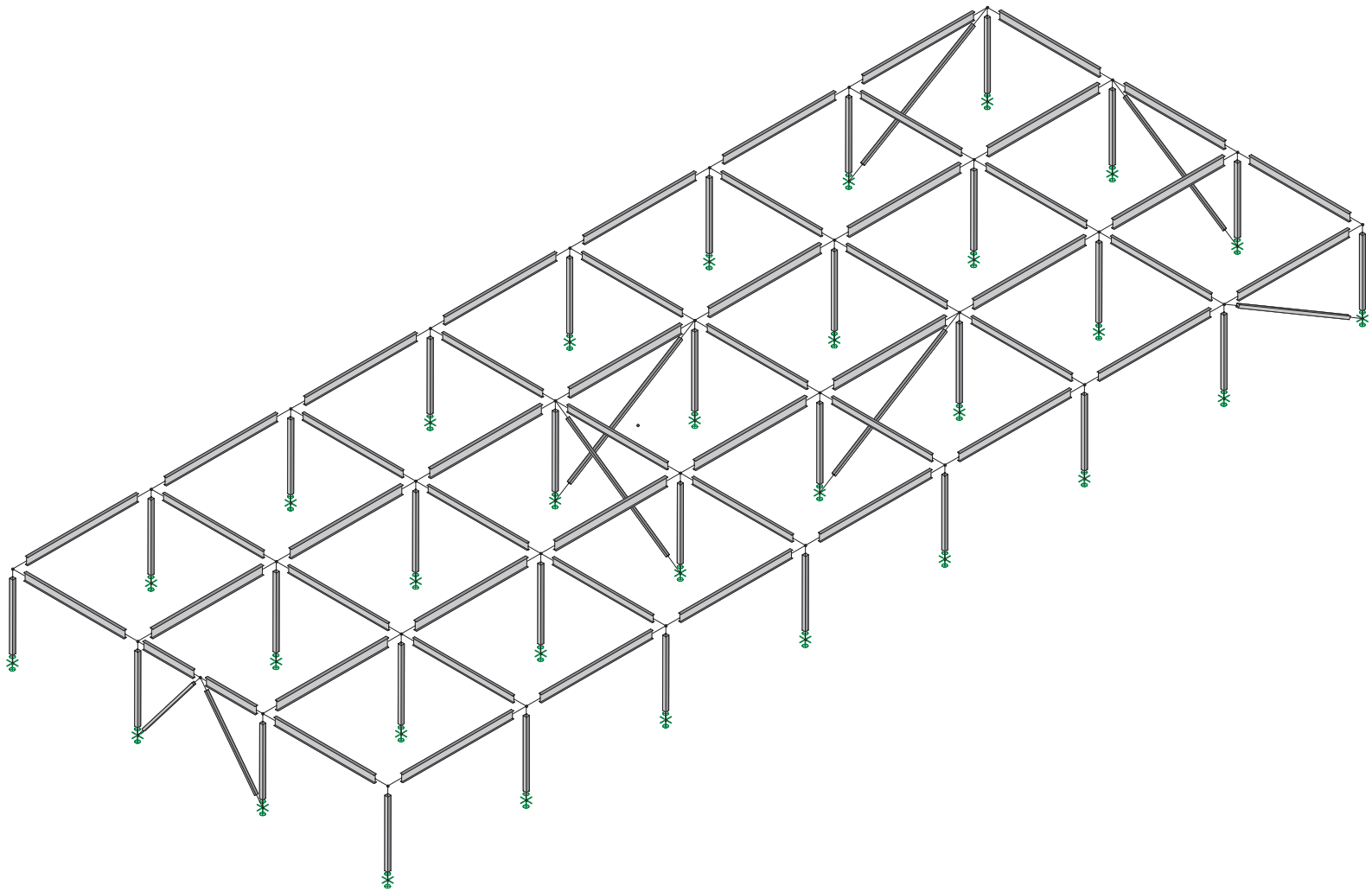
Loads: BLC 3, Superimposed Dead
Results for LC 1, LRFD16-1

Parsons Brinckerhoff	CIC Detachment 10-15	SK - 10
T. Corwith		Apr 19, 2012 at 2:22 PM
173133		CIC Detachment 10-15 braced Frames 02-Apr-...



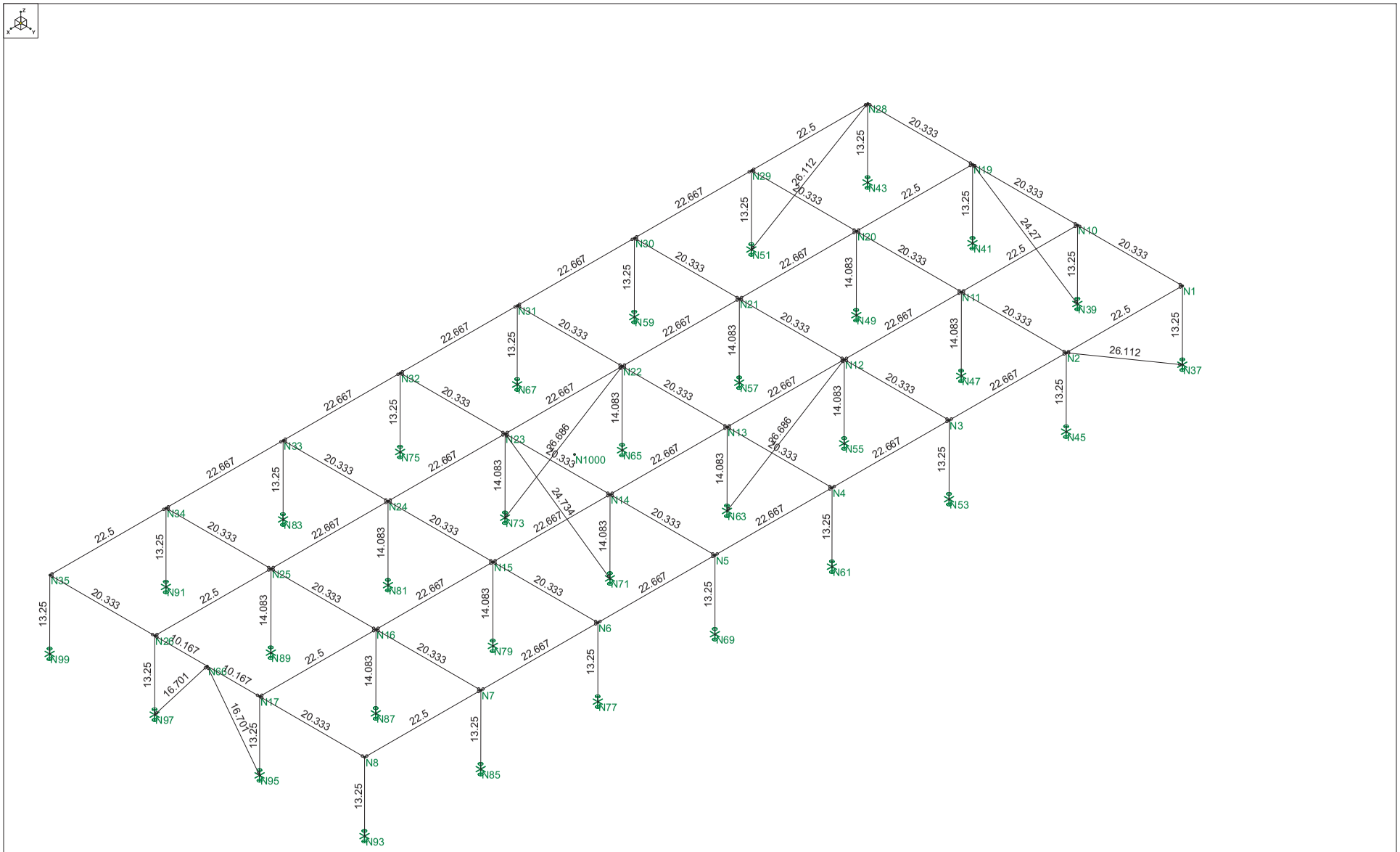
Loads: BLC 2, Snow Load
Results for LC 1, LRFD16-1

Parsons Brinckerhoff	CIC Detachment 10-15	SK - 9
T. Corwith		Apr 19, 2012 at 2:22 PM
173133		CIC Detachment 10-15 braced Frames 02-Apr-...



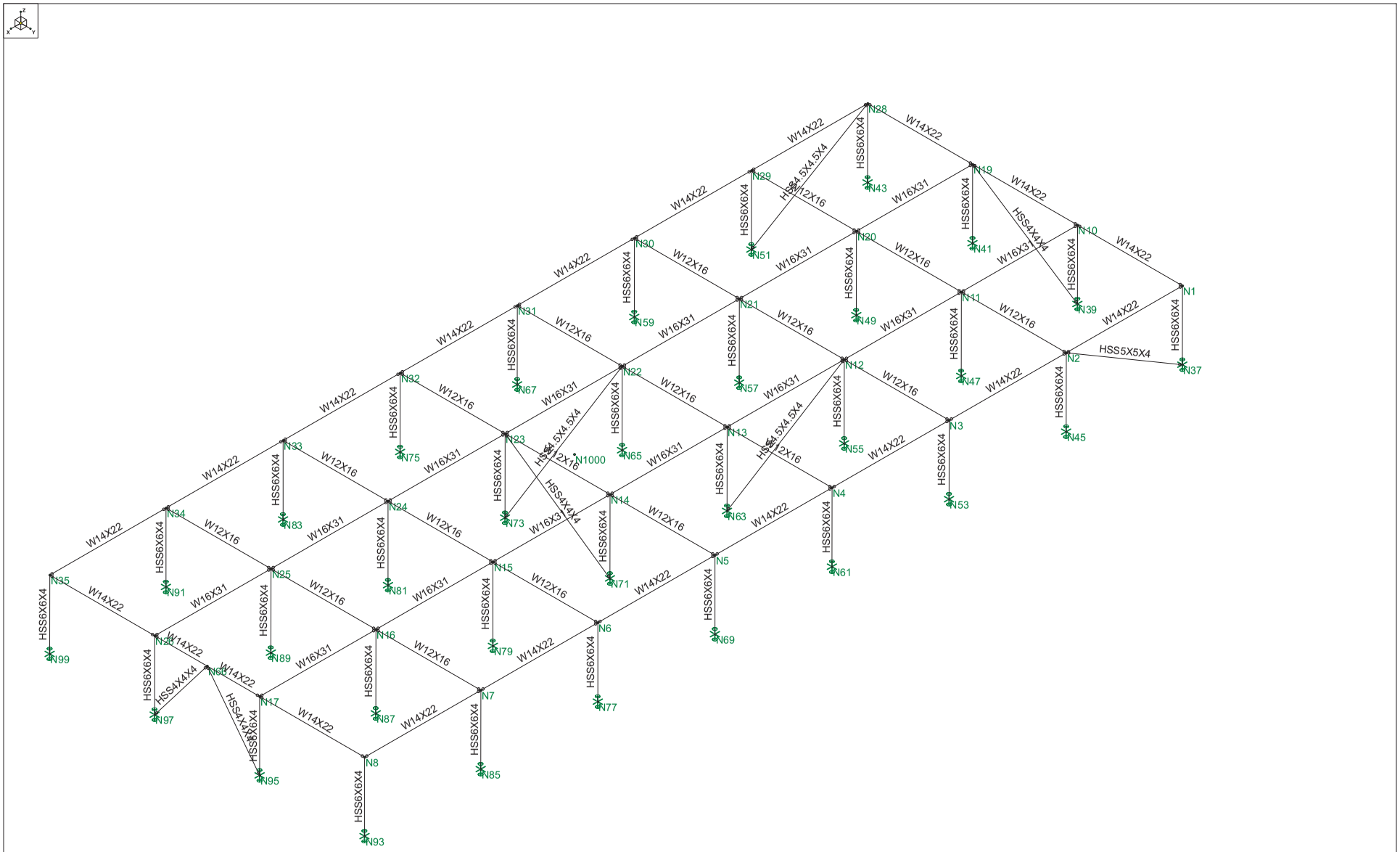
Results for LC 1, LRFD16-1

Parsons Brinckerhoff	CIC Detachment 10-15	SK - 8
T. Corwith		Apr 19, 2012 at 2:21 PM
173133		CIC Detachment 10-15 braced Frames 02-Apr-...



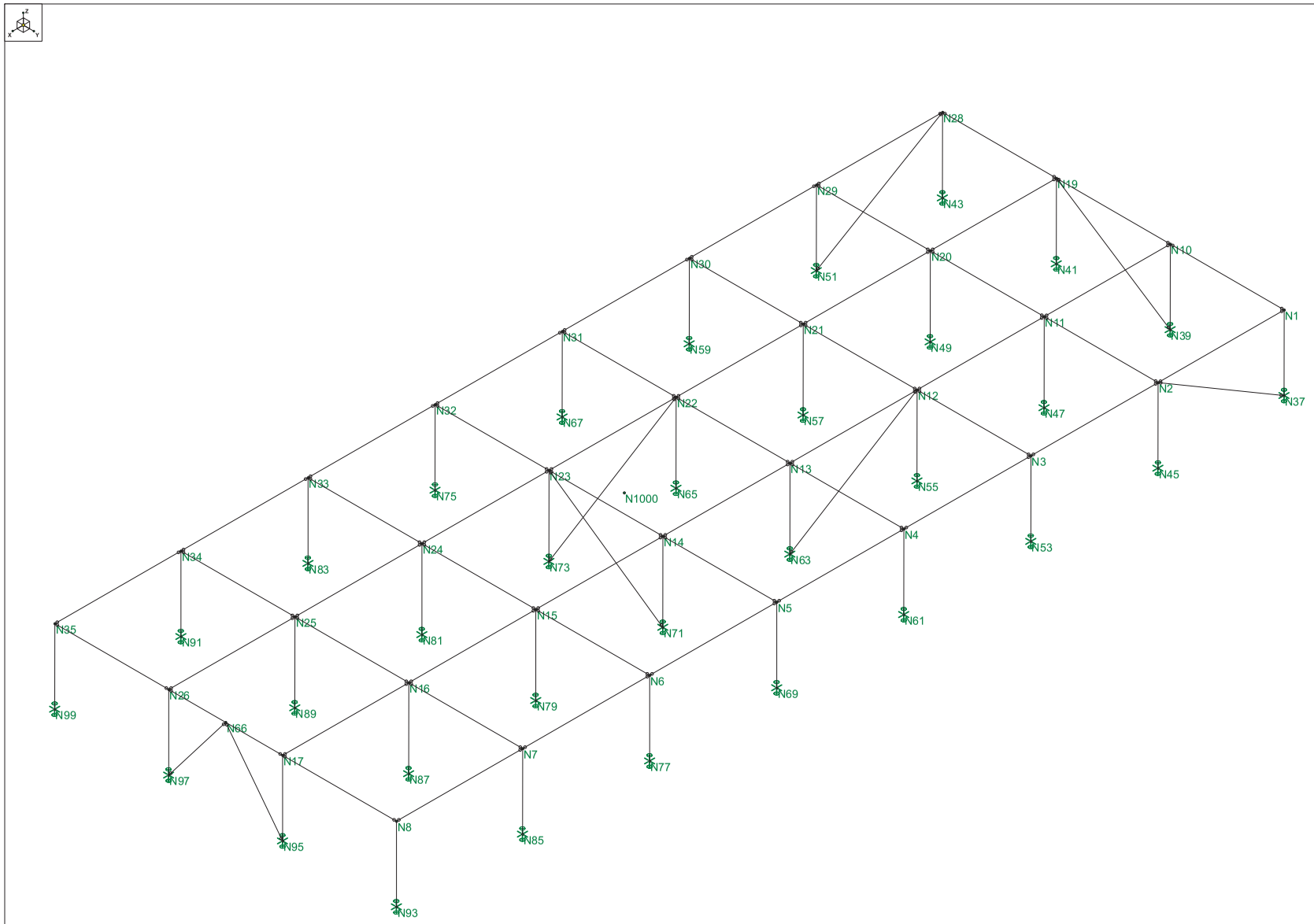
Member Length (ft) Displayed
Results for LC 1, LRFD16-1

Parsons Brinckerhoff	CIC Detachment 10-15	SK - 7
T. Corwith		Apr 19, 2012 at 2:20 PM
173133		CIC Detachment 10-15 braced Frames 02-Apr-...



Results for LC 1, LRFD16-1

Parsons Brinckerhoff	CIC Detachment 10-15	SK - 6
T. Corwith		Apr 19, 2012 at 2:19 PM
173133		CIC Detachment 10-15 braced Frames 02-Apr-...



Results for LC 1, LRFD16-1

Parsons Brinckerhoff	CIC Detachment 10-15	SK - 5
T. Corwith		Apr 19, 2012 at 2:19 PM
173133		CIC Detachment 10-15 braced Frames 02-Apr-...

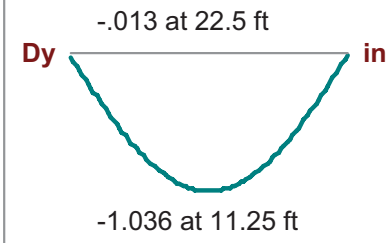
Drift and Member Size Check

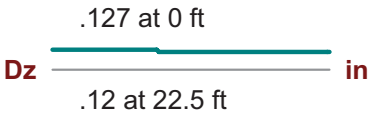
CIC – Detachment 10-15; Ft. Drum, New York

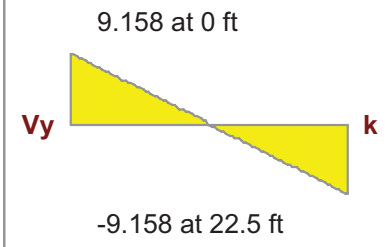
Maximum Gravity Sample

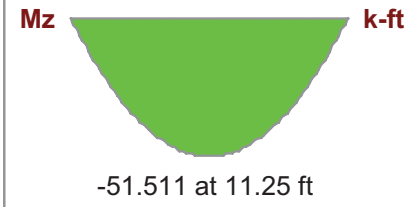
Beam: ***M50***

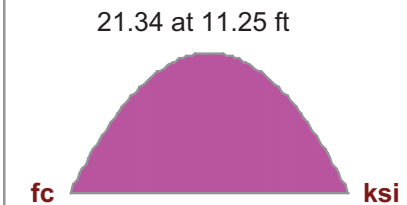
Shape: **W14X22**
Material: **A992**
Length: **22.5 ft**
I Joint: **N34**
J Joint: **N35**
LC 8: LRFD 16-5.1
Code Check: **0.470 (bending)**
Report Based On 97 Sections

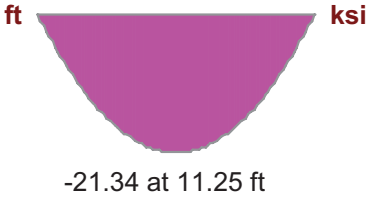












AISC 13th(360-05): LRFD Code Check

Direct Analysis Method

Max Bending Check	**0.470**	Max Shear Check	**0.107 (y)**	
Location	**11.25 ft**	Location	**0 ft**	
Equation	**H1-1b**	Max Defl Ratio	**L/266**	
Bending Flange	**Compact**	Compression Flange	**Non-Slender**	**Qs=1**
Bending Web	**Compact**	Compression Web	**Slender**	**Qa=1**

Fy	**50 ksi**
phi*Pnc	**21.693 k**
phi*Pnt	**292.05 k**
phi*Mny	**16.462 k-ft**
phi*Mnz	**109.634 k-ft**
phi*Vny	**85.325 k**
phi*Vnz	**90.45 k**
Cb	**1**

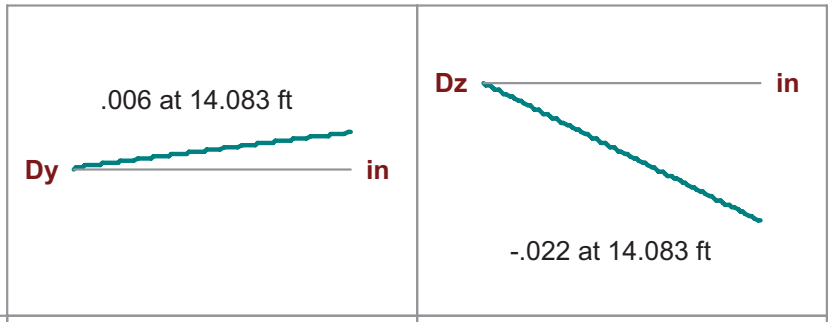
	y-y	z-z
Lb	**22.5 ft**	**22.5 ft**
KL/r	**259.978**	**48.76**
Sway	**No**	**No**

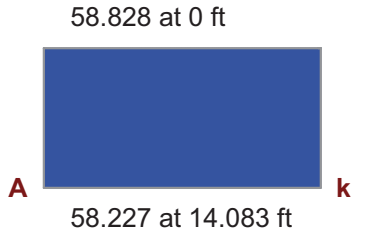
L Comp Flange	**5.75 ft**
Torque Length	**NC**
Tau_b	**1**

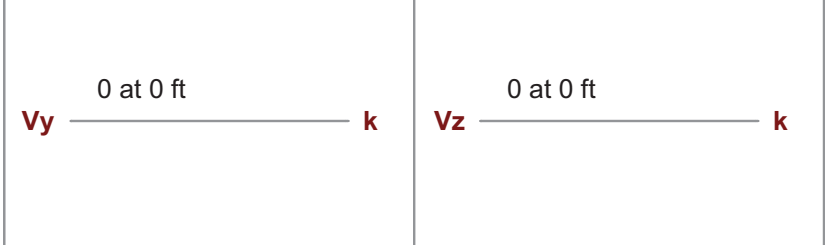
Maximum Compression Sample - Gravity Column

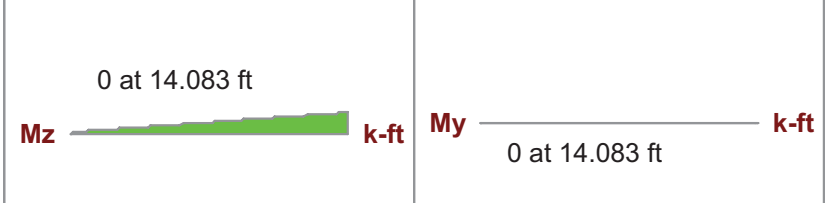
Column: ***C10***

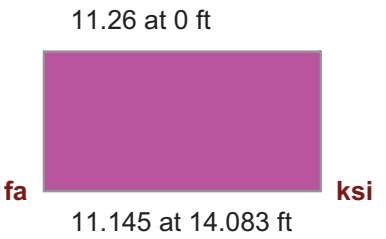
Shape: **HSS6X6X4**
Material: **A500 Gr.46**
Length: **14.083 ft**
I Joint: **N55**
J Joint: **N12**
LC 4: LRFD16-3b.1
Code Check: **0.386 (bending)**
Report Based On 97 Sections

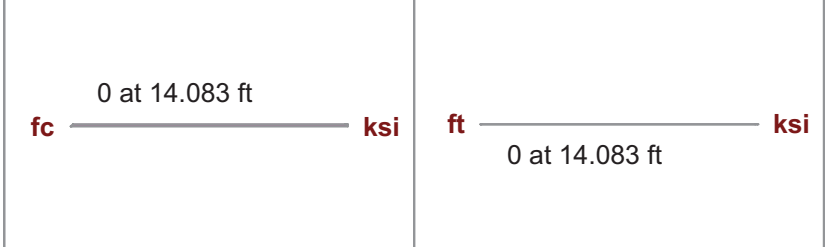












AISC 13th(360-05): LRFD Code Check

Direct Analysis Method

Max Bending Check	**0.386**	Max Shear Check	**0.000 (y)**
Location	**0 ft**	Location	**0 ft**
Equation	**H1-1a**	Max Defl Ratio	**L/10000**
Bending Flange	**Compact**	Compression Flange	**Non-Slender**
Bending Web	**Compact**	Compression Web	**Non-Slender**

Fy	**46 ksi**
phi*Pnc	**152.217 k**
phi*Pnt	**216.297 k**
phi*Mny	**38.625 k-ft**
phi*Mnz	**38.625 k-ft**
phi*Vny	**61.247 k**
phi*Vnz	**61.247 k**
phi*Tn	**31.918 k-ft**
Cb	**1.667**

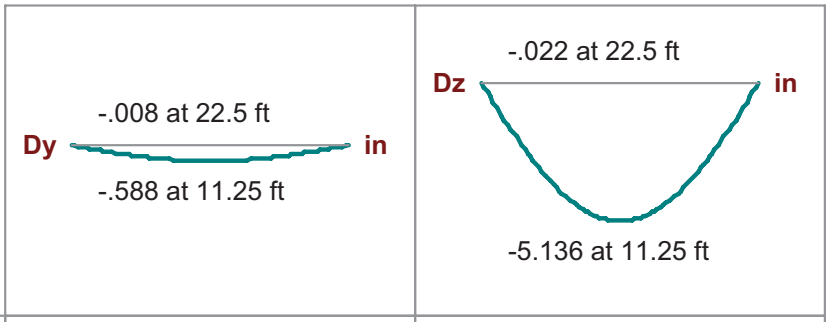
	y-y	z-z
Lb	**14.083 ft**	**14.083 ft**
KL/r	**72.271**	**72.271**
Sway	**No**	**No**

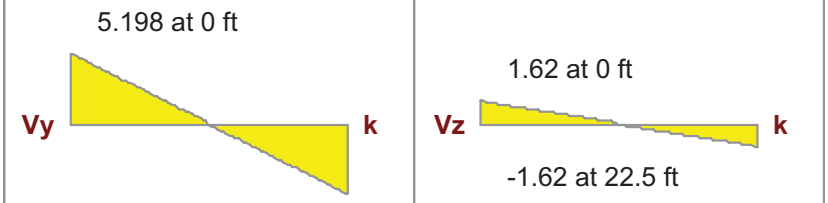
L Comp Flange	**14.083 ft**
Torque Length	**NC**
Tau_b	**1**

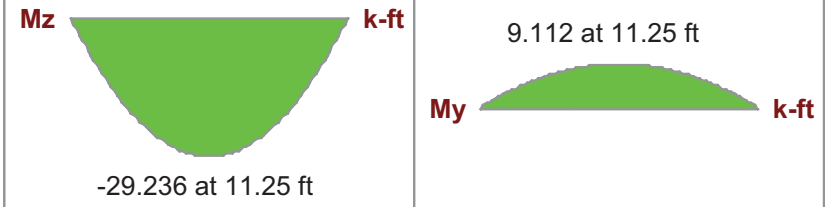
Maximum Uplift Sample

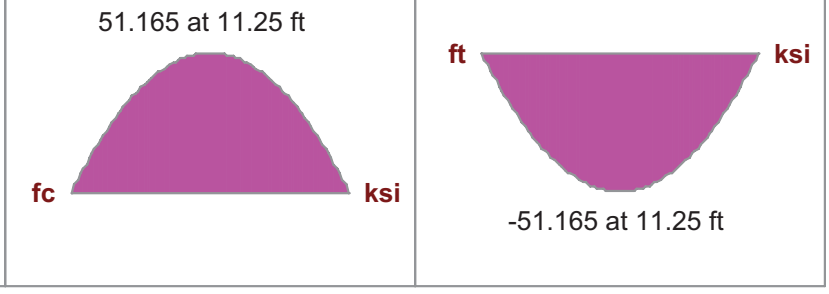
Beam: ***M50***

Shape: **W14X22**
Material: **A992**
Length: **22.5 ft**
I Joint: **N34**
J Joint: **N35**
LC 6: LRFD 16-4.1
Code Check: **0.820 (bending)**
Report Based On 97 Sections









AISC 13th(360-05): LRFD Code Check

Direct Analysis Method

Max Bending Check	**0.820**	Max Shear Check	**0.061 (y)**	
Location	**11.25 ft**	Location	**0 ft**	
Equation	**H1-1b**	Max Defl Ratio	**L/53**	
Bending Flange	**Compact**	Compression Flange	**Non-Slender**	**Qs=1**
Bending Web	**Compact**	Compression Web	**Slender**	**Qa=1**

Fy	**50 ksi**
phi*Pnc	**21.693 k**
phi*Pnt	**292.05 k**
phi*Mny	**16.462 k-ft**
phi*Mnz	**109.634 k-ft**
phi*Vny	**85.325 k**
phi*Vnz	**90.45 k**
Cb	**1**

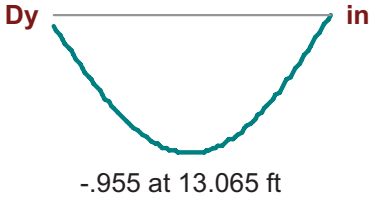
	y-y	z-z
Lb	**22.5 ft**	**22.5 ft**
KL/r	**259.978**	**48.76**
Sway	**No**	**No**

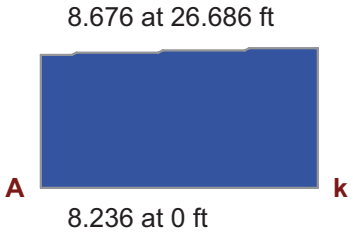
L Comp Flange	**5.75 ft**
Torque Length	**NC**
Tau_b	**1**

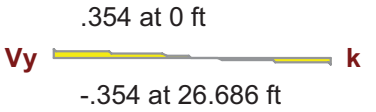
Brace Sample

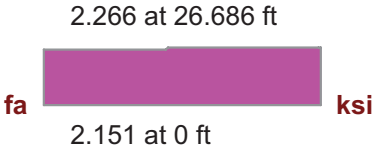
VBrace: ***B4***

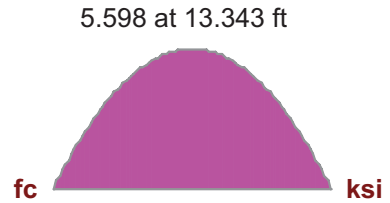
Shape: **HSS4.5X4.5X4**
Material: **A572 Gr.50**
Length: **26.686 ft**
I Joint: **N22**
J Joint: **N73**
LC 5: LRFD 16-3b.2
Code Check: **0.429 (bending)**
Report Based On 97 Sections

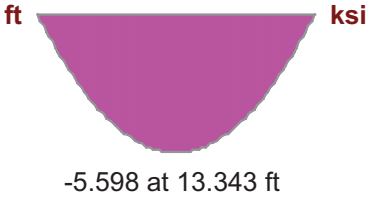












AISC 13th(360-05): LRFD Code Check

Direct Analysis Method

Max Bending Check	**0.429**	Max Shear Check	**0.007 (y)**
Location	**13.899 ft**	Location	**0 ft**
Equation	**H1-1a**	Max Defl Ratio	**L/349**
Bending Flange	**Compact**	Compression Flange	**Non-Slender**
Bending Web	**Compact**	Compression Web	**Non-Slender**

Fy	**50 ksi**
phi*Pnc	**25.126 k**
phi*Pnt	**172.331 k**
phi*Mny	**22.689 k-ft**
phi*Mnz	**22.689 k-ft**
phi*Vny	**47.74 k**
phi*Vnz	**47.74 k**
phi*Tn	**18.945 k-ft**
Cb	**1.136**

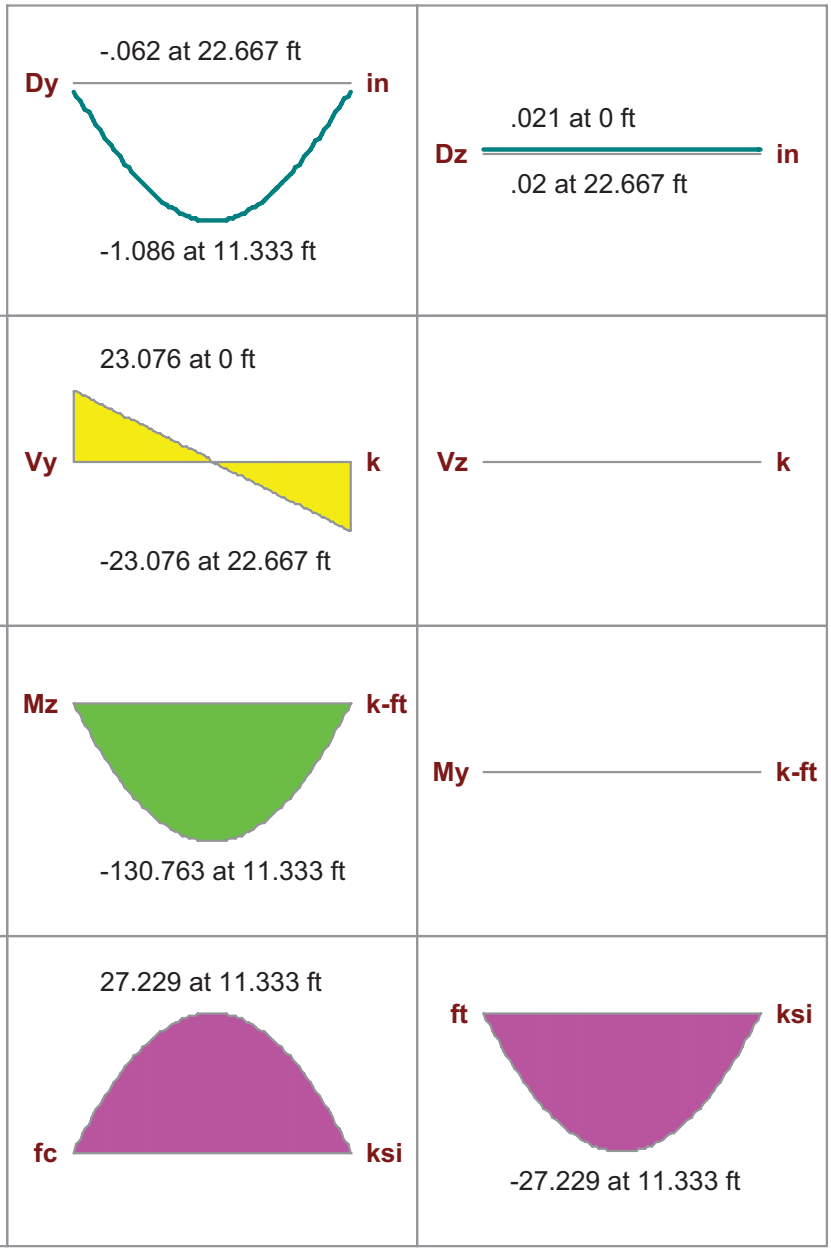
	y-y	z-z
Lb	**26.686 ft**	**26.686 ft**
KL/r	**185.559**	**185.559**
Sway	**No**	**No**

L Comp Flange	**26.686 ft**
Torque Length	**NC**
Tau_b	**1**

Deflection Check Example

Beam: ***M40***

Shape: **W18X35**
Material: **A992**
Length: **22.667 ft**
I Joint: **N21**
J Joint: **N22**
LC 14: ASD 16-10
Code Check: **No Calc**
Report Based On 97 Sections



AISC 13th(360-05): LRFD Code Check

Direct Analysis Method

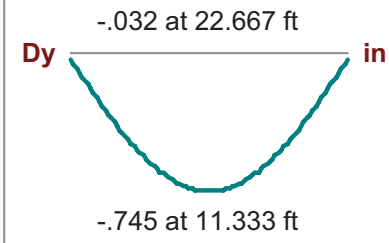
- This load combination was not selected for steel design -

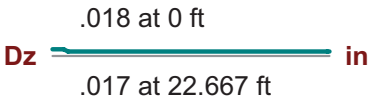
Max Defl Ratio **L/266** Deflection is ok

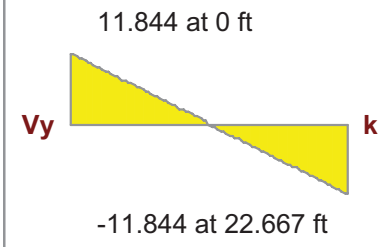
Deflection Check Example

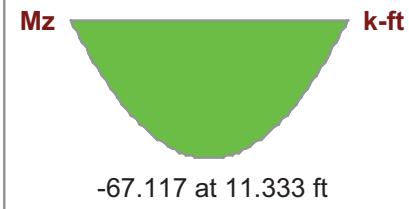
Beam: ***M29***

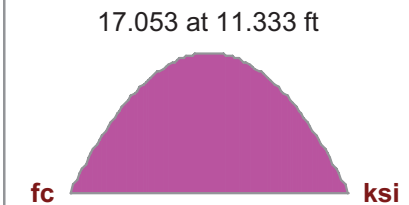
Shape: **W16X31**
Material: **A992**
Length: **22.667 ft**
I Joint: **N5**
J Joint: **N6**
LC 14: ASD 16-10
Code Check: **No Calc**
Report Based On 97 Sections

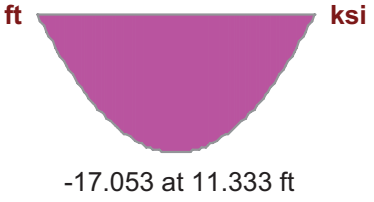












AISC 13th(360-05): LRFD Code Check

Direct Analysis Method

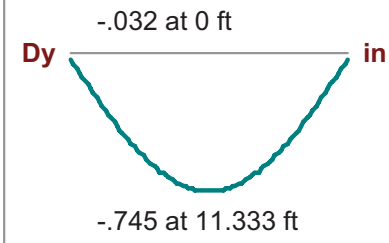
- This load combination was not selected for steel design -

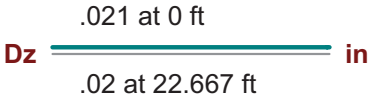
Max Defl Ratio **L/381** Deflection is ok

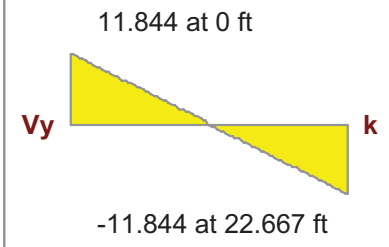
Deflection Check Example

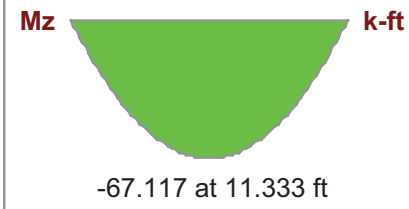
Beam: ***M27***

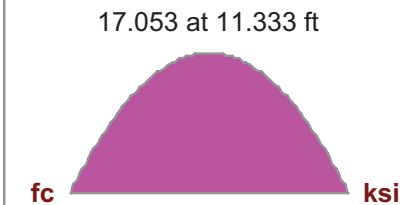
Shape: **W16X31**
Material: **A992**
Length: **22.667 ft**
I Joint: **N3**
J Joint: **N4**
LC 14: ASD 16-10
Code Check: **No Calc**
Report Based On 97 Sections

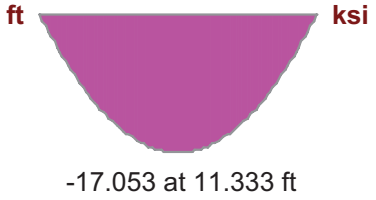












AISC 13th(360-05): LRFD Code Check
Direct Analysis Method

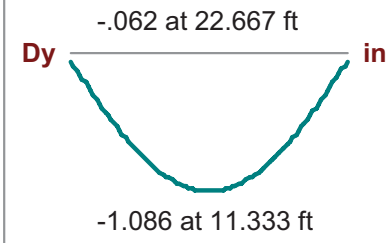
- This load combination was not selected for steel design -

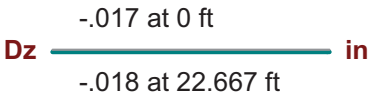
Max Defl Ratio **L/381** Deflection is ok

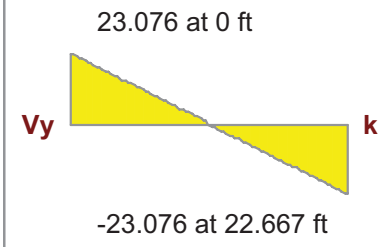
Deflection Check Example

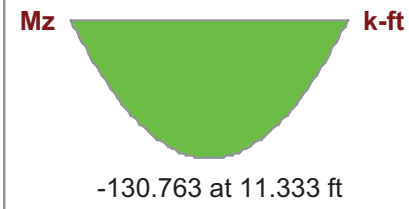
Beam: ***M51***

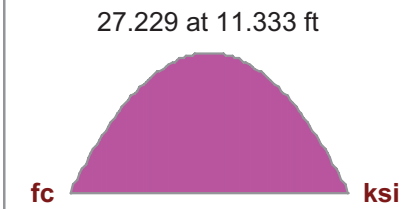
Shape: **W18X35**
Material: **A992**
Length: **22.667 ft**
I Joint: **N24**
J Joint: **N23**
LC 14: ASD 16-10
Code Check: **No Calc**
Report Based On 97 Sections

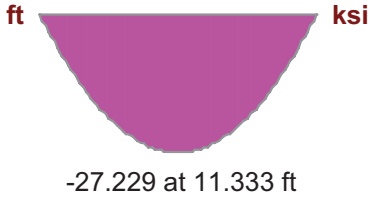












AISC 13th(360-05): LRFD Code Check
Direct Analysis Method

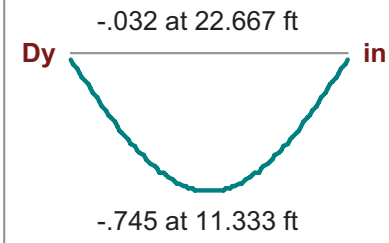
- This load combination was not selected for steel design -

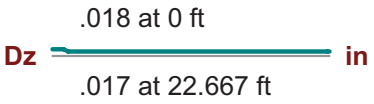
Max Defl Ratio **L/266** Deflection is ok

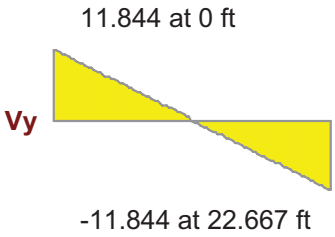
Deflection Check Example

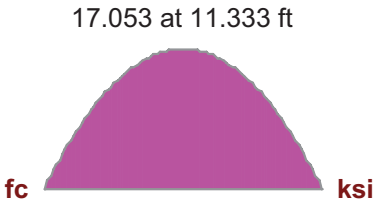
Beam: ***M48***

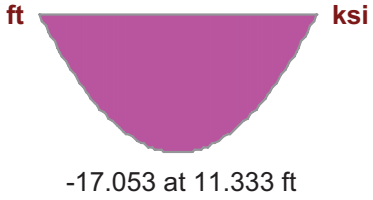
Shape: **W16X31**
Material: **A992**
Length: **22.667 ft**
I Joint: **N32**
J Joint: **N33**
LC 14: ASD 16-10
Code Check: **No Calc**
Report Based On 97 Sections











AISC 13th(360-05): LRFD Code Check
Direct Analysis Method

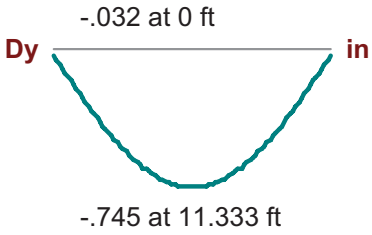
- This load combination was not selected for steel design -

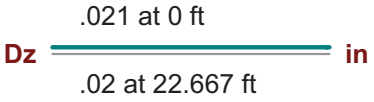
Max Defl Ratio **L/381** Deflection is ok

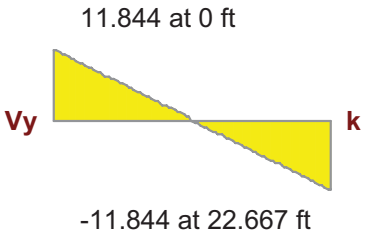
Deflection Check Example

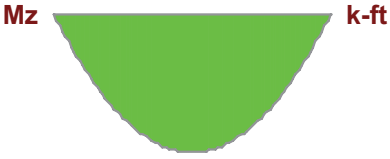
Beam: ***M46***

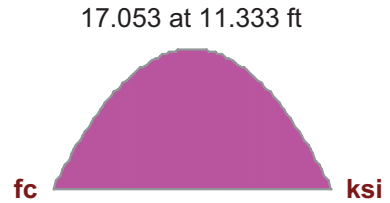
Shape: **W16X31**
Material: **A992**
Length: **22.667 ft**
I Joint: **N30**
J Joint: **N31**
LC 14: ASD 16-10
Code Check: **No Calc**
Report Based On 97 Sections

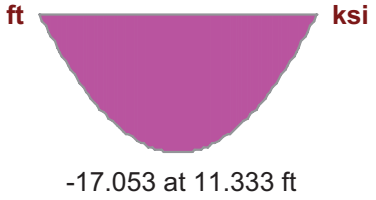












AISC 13th(360-05): LRFD Code Check
Direct Analysis Method

- This load combination was not selected for steel design -

Max Defl Ratio **L/381** Deflection is ok

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
1	1	C1	HSS6X6X4	.027	0	.000	0	y	158.485	216.297	38.625	38.625	1.72	H1-1b
2	1	C2	HSS6X6X4	.049	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
3	1	C3	HSS6X6X4	.051	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
4	1	C4	HSS6X6X4	.029	0	.000	0	y	158.482	216.297	38.625	38.625	1.667	H1-1b
5	1	C5	HSS6X6X4	.041	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
6	1	C6	HSS6X6X4	.093	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
7	1	C7	HSS6X6X4	.093	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
8	1	C8	HSS6X6X4	.048	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
9	1	C9	HSS6X6X4	.048	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
10	1	C10	HSS6X6X4	.089	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
11	1	C11	HSS6X6X4	.093	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
12	1	C12	HSS6X6X4	.048	0	.000	0	y	158.485	216.297	38.625	38.625	1	H1-1b
13	1	C13	HSS6X6X4	.048	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
14	1	C14	HSS6X6X4	.093	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
15	1	C15	HSS6X6X4	.089	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
16	1	C16	HSS6X6X4	.048	0	.000	0	y	158.485	216.297	38.625	38.625	1	H1-1b
17	1	C17	HSS6X6X4	.048	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
18	1	C18	HSS6X6X4	.093	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
19	1	C19	HSS6X6X4	.088	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
20	1	C20	HSS6X6X4	.048	0	.000	0	y	158.485	216.297	38.625	38.625	1	H1-1b
21	1	C21	HSS6X6X4	.048	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
22	1	C22	HSS6X6X4	.093	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
23	1	C23	HSS6X6X4	.093	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
24	1	C24	HSS6X6X4	.048	0	.000	0	y	158.485	216.297	38.625	38.625	1	H1-1b
25	1	C25	HSS6X6X4	.048	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
26	1	C26	HSS6X6X4	.093	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
27	1	C27	HSS6X6X4	.093	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
28	1	C28	HSS6X6X4	.048	0	.000	0	y	158.485	216.297	38.625	38.625	1	H1-1b
29	1	C29	HSS6X6X4	.027	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
30	1	C30	HSS6X6X4	.047	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
31	1	C31	HSS6X6X4	.047	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
32	1	C32	HSS6X6X4	.027	0	.000	0	z	158.482	216.297	38.625	38.625	1	H1-1b
33	1	M1	W16X31	.073	10.167	.007	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
34	1	M2	W16X31	.073	10.167	.007	20.333	y	47.052	410.4	26.363	61.333	1.136	H1-1b
35	1	M3	W16X31	.073	10.167	.007	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
36	1	M4	W12X16	.186	10.167	.006	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
37	1	M5	W12X16	.186	10.167	.006	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
38	1	M6	W12X16	.186	10.167	.006	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
39	1	M7	W12X16	.186	10.167	.006	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
40	1	M8	W12X16	.186	10.167	.006	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
41	1	M9	W12X16	.186	10.167	.006	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
42	1	M10	W12X16	.186	10.167	.006	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
43	1	M11	W12X16	.186	10.167	.006	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
44	1	M12	W12X16	.186	10.167	.006	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
45	1	M13	W12X16	.186	10.167	.006	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
46	1	M14	W12X16	.186	10.167	.006	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
47	1	M15	W12X16	.186	10.167	.006	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
48	1	M16	W12X16	.186	10.167	.006	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
49	1	M17	W12X16	.186	10.167	.006	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
50	1	M18	W12X16	.186	10.167	.006	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
51	1	M19	W12X16	.186	10.167	.006	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
52	1	M20	W12X16	.186	10.167	.006	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
53	1	M21	W12X16	.186	10.167	.006	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
54	1	M22	W16X31	.073	10.167	.007	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
55	1	M23	W16X31	.016	10.167	.006	10.167	y	184.016	410.4	26.363	202.5	2.712	H1-1b
56	1	M24	W16X31	.073	10.167	.007	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
57	1	M25	W16X31	.213	11.25	.060	0	y	38.427	410.4	26.363	185.964	1	H1-1b
58	1	M26	W16X31	.216	11.333	.060	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
59	1	M27	W16X31	.216	11.333	.060	0	y	37.864	410.4	26.363	185.964	1	H1-1b
60	1	M28	W16X31	.216	11.333	.060	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
61	1	M29	W16X31	.216	11.333	.060	0	y	37.864	410.4	26.363	185.964	1	H1-1b
62	1	M30	W16X31	.216	11.333	.060	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
63	1	M31	W16X31	.213	11.25	.060	0	y	38.427	410.4	26.363	185.964	1	H1-1b
64	1	M32	W18X35	.321	11.25	.092	0	y	47.414	463.5	30.225	231.83	1	H1-1b
65	1	M33	W18X35	.326	11.333	.093	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
66	1	M34	W18X35	.326	11.333	.093	0	y	46.719	463.5	30.225	231.83	1	H1-1b
67	1	M35	W18X35	.326	11.333	.093	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
68	1	M36	W18X35	.326	11.333	.093	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
69	1	M37	W18X35	.321	11.25	.092	0	y	47.414	463.5	30.225	231.83	1	H1-1b
70	1	M38	W18X35	.321	11.25	.092	0	y	47.414	463.5	30.225	231.83	1	H1-1b
71	1	M39	W18X35	.326	11.333	.093	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
72	1	M40	W18X35	.326	11.333	.093	0	y	46.719	463.5	30.225	231.83	1	H1-1b
73	1	M41	W18X35	.326	11.333	.093	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
74	1	M42	W18X35	.326	11.333	.093	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
75	1	M43	W18X35	.321	11.25	.092	0	y	47.414	463.5	30.225	231.83	1	H1-1b
76	1	M44	W16X31	.213	11.25	.060	0	y	38.427	410.4	26.363	185.964	1	H1-1b
77	1	M45	W16X31	.216	11.333	.060	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
78	1	M46	W16X31	.216	11.333	.060	0	y	37.864	410.4	26.363	185.964	1	H1-1b
79	1	M47	W16X31	.216	11.333	.060	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
80	1	M48	W16X31	.216	11.333	.060	0	y	37.864	410.4	26.363	185.964	1	H1-1b
81	1	M49	W16X31	.216	11.333	.060	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
82	1	M50	W16X31	.213	11.25	.060	0	y	38.427	410.4	26.363	185.964	1	H1-1b
83	1	M51	W18X35	.326	11.333	.093	0	y	46.719	463.5	30.225	231.83	1	H1-1b
84	1	M52	W18X35	.326	11.333	.093	0	y	46.719	463.5	30.225	231.83	1	H1-1b
85	1	B1	HSS5X5X4	.184	12.784	.009	0	y	36.808	193.256	28.467	28.467	1.136	H1-1b
86	1	B2	HSS4X4X4	.114	12.135	.008	0	y	20.744	151.406	17.565	17.565	1.136	H1-1b
87	1	B3	HSS4.5X4.5...	.182	13.621	.009	0	y	25.126	172.331	22.689	22.689	1.136	H1-1b
88	1	B4	HSS4.5X4.5...	.185	13.621	.009	0	y	25.126	172.331	22.689	22.689	1.136	H1-1b
89	1	B5	HSS4X4X4	.194	12.625	.008	24.734	y	19.972	151.406	17.565	17.565	1.136	H1-1b
90	1	B6	HSS4X4X4	.076	8.003	.004	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
91	1	B7	HSS4X4X4	.041	8.351	.004	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
92	1	M53	W16X31	.016	0	.006	0	y	184.016	410.4	26.363	202.5	2.712	H1-1b
93	1	B8	HSS4.5X4.5...	.119	13.056	.009	0	y	26.243	172.331	22.689	22.689	1.136	H1-1b
94	2	C1	HSS6X6X4	.034	0	.000	0	y	158.485	216.297	38.625	38.625	1.72	H1-1b
95	2	C2	HSS6X6X4	.064	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
96	2	C3	HSS6X6X4	.065	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
97	2	C4	HSS6X6X4	.036	0	.000	0	y	158.482	216.297	38.625	38.625	1.667	H1-1b
98	2	C5	HSS6X6X4	.052	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
99	2	C6	HSS6X6X4	.247	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1a
100	2	C7	HSS6X6X4	.247	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1a
101	2	C8	HSS6X6X4	.063	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
102	2	C9	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
103	2	C10	HSS6X6X4	.237	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
104	2	C11	HSS6X6X4	.248	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
105	2	C12	HSS6X6X4	.063	0	.000	0	y	158.485	216.297	38.625	38.625	1	H1-1b
106	2	C13	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
107	2	C14	HSS6X6X4	.248	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
108	2	C15	HSS6X6X4	.236	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
109	2	C16	HSS6X6X4	.063	0	.000	0	y	158.485	216.297	38.625	38.625	1	H1-1b
110	2	C17	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
111	2	C18	HSS6X6X4	.248	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
112	2	C19	HSS6X6X4	.235	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
113	2	C20	HSS6X6X4	.063	0	.000	0	y	158.485	216.297	38.625	38.625	1	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
114	2	C21	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
115	2	C22	HSS6X6X4	.248	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
116	2	C23	HSS6X6X4	.248	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
117	2	C24	HSS6X6X4	.063	0	.000	0	y	158.485	216.297	38.625	38.625	1	H1-1b
118	2	C25	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
119	2	C26	HSS6X6X4	.247	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1a
120	2	C27	HSS6X6X4	.247	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1a
121	2	C28	HSS6X6X4	.063	0	.000	0	y	158.485	216.297	38.625	38.625	1	H1-1b
122	2	C29	HSS6X6X4	.034	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
123	2	C30	HSS6X6X4	.061	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
124	2	C31	HSS6X6X4	.061	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
125	2	C32	HSS6X6X4	.034	0	.000	0	z	158.482	216.297	38.625	38.625	1	H1-1b
126	2	M1	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
127	2	M2	W16X31	.063	10.167	.006	20.333	y	47.052	410.4	26.363	61.333	1.136	H1-1b
128	2	M3	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
129	2	M4	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
130	2	M5	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
131	2	M6	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
132	2	M7	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
133	2	M8	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
134	2	M9	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
135	2	M10	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
136	2	M11	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
137	2	M12	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
138	2	M13	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
139	2	M14	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
140	2	M15	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
141	2	M16	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
142	2	M17	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
143	2	M18	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
144	2	M19	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
145	2	M20	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
146	2	M21	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
147	2	M22	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
148	2	M23	W16X31	.019	10.167	.006	10.167	y	184.016	410.4	26.363	202.5	2.309	H1-1b
149	2	M24	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
150	2	M25	W16X31	.284	11.25	.080	0	y	38.427	410.4	26.363	185.964	1	H1-1b
151	2	M26	W16X31	.289	11.333	.080	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
152	2	M27	W16X31	.289	11.333	.080	0	y	37.864	410.4	26.363	185.964	1	H1-1b
153	2	M28	W16X31	.289	11.333	.080	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
154	2	M29	W16X31	.289	11.333	.080	0	y	37.864	410.4	26.363	185.964	1	H1-1b
155	2	M30	W16X31	.289	11.333	.080	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
156	2	M31	W16X31	.284	11.25	.080	0	y	38.427	410.4	26.363	185.964	1	H1-1b
157	2	M32	W18X35	.439	11.25	.126	0	y	47.414	463.5	30.225	231.83	1	H1-1b
158	2	M33	W18X35	.445	11.333	.127	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
159	2	M34	W18X35	.445	11.333	.127	0	y	46.719	463.5	30.225	231.83	1	H1-1b
160	2	M35	W18X35	.445	11.333	.127	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
161	2	M36	W18X35	.445	11.333	.127	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
162	2	M37	W18X35	.439	11.25	.126	0	y	47.414	463.5	30.225	231.83	1	H1-1b
163	2	M38	W18X35	.439	11.25	.126	0	y	47.414	463.5	30.225	231.83	1	H1-1b
164	2	M39	W18X35	.445	11.333	.127	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
165	2	M40	W18X35	.445	11.333	.127	0	y	46.719	463.5	30.225	231.83	1	H1-1b
166	2	M41	W18X35	.445	11.333	.127	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
167	2	M42	W18X35	.445	11.333	.127	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
168	2	M43	W18X35	.439	11.25	.126	0	y	47.414	463.5	30.225	231.83	1	H1-1b
169	2	M44	W16X31	.284	11.25	.080	0	y	38.427	410.4	26.363	185.964	1	H1-1b
170	2	M45	W16X31	.289	11.333	.080	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
171	2	M46	W16X31	.289	11.333	.080	0	y	37.864	410.4	26.363	185.964	1	H1-1b
172	2	M47	W16X31	.289	11.333	.080	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
173	2	M48	W16X31	.289	11.333	.080	0	y	37.864	410.4	26.363	185.964	1	H1-1b
174	2	M49	W16X31	.289	11.333	.080	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
175	2	M50	W16X31	.284	11.25	.080	0	y	38.427	410.4	26.363	185.964	1	H1-1b
176	2	M51	W18X35	.445	11.333	.127	0	y	46.719	463.5	30.225	231.83	1	H1-1b
177	2	M52	W18X35	.445	11.333	.127	0	y	46.719	463.5	30.225	231.83	1	H1-1b
178	2	B1	HSS5X5X4	.285	12.512	.007	0	y	36.808	193.256	28.467	28.467	1.136	H1-1a
179	2	B2	HSS4X4X4	.098	12.135	.007	0	y	20.744	151.406	17.565	17.565	1.136	H1-1b
180	2	B3	HSS4.5X4.5...	.185	13.621	.007	0	y	25.126	172.331	22.689	22.689	1.136	H1-1b
181	2	B4	HSS4.5X4.5...	.189	13.621	.007	0	y	25.126	172.331	22.689	22.689	1.136	H1-1b
182	2	B5	HSS4X4X4	.300	13.14	.007	0	y	19.972	151.406	17.565	17.565	1.136	H1-1a
183	2	B6	HSS4X4X4	.077	8.003	.003	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
184	2	B7	HSS4X4X4	.038	8.351	.003	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
185	2	M53	W16X31	.019	0	.006	0	y	184.016	410.4	26.363	202.5	2.309	H1-1b
186	2	B8	HSS4.5X4.5...	.103	13.056	.007	0	y	26.243	172.331	22.689	22.689	1.136	H1-1b
187	3	C1	HSS6X6X4	.057	0	.000	0	y	158.485	216.297	38.625	38.625	1.72	H1-1b
188	3	C2	HSS6X6X4	.220	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1a
189	3	C3	HSS6X6X4	.226	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1a
190	3	C4	HSS6X6X4	.061	0	.000	0	y	158.482	216.297	38.625	38.625	1.667	H1-1b
191	3	C5	HSS6X6X4	.090	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
192	3	C6	HSS6X6X4	.443	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
193	3	C7	HSS6X6X4	.443	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
194	3	C8	HSS6X6X4	.219	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1a
195	3	C9	HSS6X6X4	.220	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1a
196	3	C10	HSS6X6X4	.422	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
197	3	C11	HSS6X6X4	.444	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
198	3	C12	HSS6X6X4	.220	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1a
199	3	C13	HSS6X6X4	.220	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1a
200	3	C14	HSS6X6X4	.444	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
201	3	C15	HSS6X6X4	.420	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
202	3	C16	HSS6X6X4	.220	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1a
203	3	C17	HSS6X6X4	.220	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1a
204	3	C18	HSS6X6X4	.444	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
205	3	C19	HSS6X6X4	.418	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
206	3	C20	HSS6X6X4	.220	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1a
207	3	C21	HSS6X6X4	.220	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1a
208	3	C22	HSS6X6X4	.444	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
209	3	C23	HSS6X6X4	.444	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
210	3	C24	HSS6X6X4	.220	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1a
211	3	C25	HSS6X6X4	.219	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1a
212	3	C26	HSS6X6X4	.442	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1a
213	3	C27	HSS6X6X4	.442	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1a
214	3	C28	HSS6X6X4	.219	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1a
215	3	C29	HSS6X6X4	.057	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
216	3	C30	HSS6X6X4	.214	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1a
217	3	C31	HSS6X6X4	.214	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1a
218	3	C32	HSS6X6X4	.057	0	.000	0	z	158.482	216.297	38.625	38.625	1.667	H1-1b
219	3	M1	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
220	3	M2	W16X31	.063	10.167	.006	20.333	y	47.052	410.4	26.363	61.333	1.136	H1-1b
221	3	M3	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
222	3	M4	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
223	3	M5	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
224	3	M6	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
225	3	M7	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
226	3	M8	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
227	3	M9	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
228	3	M10	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
229	3	M11	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
230	3	M12	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
231	3	M13	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
232	3	M14	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
233	3	M15	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
234	3	M16	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
235	3	M17	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
236	3	M18	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
237	3	M19	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
238	3	M20	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
239	3	M21	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
240	3	M22	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
241	3	M23	W16X31	.032	10.167	.009	10.167	y	184.016	410.4	26.363	202.5	2.005	H1-1b
242	3	M24	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
243	3	M25	W16X31	.508	11.25	.142	0	y	38.427	410.4	26.363	185.964	1	H1-1b
244	3	M26	W16X31	.516	11.333	.144	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
245	3	M27	W16X31	.516	11.333	.144	0	y	37.864	410.4	26.363	185.964	1	H1-1b
246	3	M28	W16X31	.516	11.333	.144	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
247	3	M29	W16X31	.516	11.333	.144	0	y	37.864	410.4	26.363	185.964	1	H1-1b
248	3	M30	W16X31	.516	11.333	.144	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
249	3	M31	W16X31	.508	11.25	.142	0	y	38.427	410.4	26.363	185.964	1	H1-1b
250	3	M32	W18X35	.797	11.25	.229	0	y	47.414	463.5	30.225	231.83	1	H1-1b
251	3	M33	W18X35	.809	11.333	.231	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
252	3	M34	W18X35	.809	11.333	.231	0	y	46.719	463.5	30.225	231.83	1	H1-1b
253	3	M35	W18X35	.809	11.333	.231	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
254	3	M36	W18X35	.809	11.333	.231	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
255	3	M37	W18X35	.797	11.25	.229	0	y	47.414	463.5	30.225	231.83	1	H1-1b
256	3	M38	W18X35	.797	11.25	.229	0	y	47.414	463.5	30.225	231.83	1	H1-1b
257	3	M39	W18X35	.809	11.333	.231	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
258	3	M40	W18X35	.809	11.333	.231	0	y	46.719	463.5	30.225	231.83	1	H1-1b
259	3	M41	W18X35	.809	11.333	.231	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
260	3	M42	W18X35	.809	11.333	.231	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
261	3	M43	W18X35	.797	11.25	.229	0	y	47.414	463.5	30.225	231.83	1	H1-1b
262	3	M44	W16X31	.508	11.25	.142	0	y	38.427	410.4	26.363	185.964	1	H1-1b
263	3	M45	W16X31	.516	11.333	.144	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
264	3	M46	W16X31	.516	11.333	.144	0	y	37.864	410.4	26.363	185.964	1	H1-1b
265	3	M47	W16X31	.516	11.333	.144	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
266	3	M48	W16X31	.516	11.333	.144	0	y	37.864	410.4	26.363	185.964	1	H1-1b
267	3	M49	W16X31	.516	11.333	.144	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
268	3	M50	W16X31	.508	11.25	.142	0	y	38.427	410.4	26.363	185.964	1	H1-1b
269	3	M51	W18X35	.809	11.333	.231	0	y	46.719	463.5	30.225	231.83	1	H1-1b
270	3	M52	W18X35	.809	11.333	.231	0	y	46.719	463.5	30.225	231.83	1	H1-1b
271	3	B1	HSS5X5X4	.442	12.512	.007	0	y	36.808	193.256	28.467	28.467	1.136	H1-1a
272	3	B2	HSS4X4X4	.100	12.135	.007	0	y	20.744	151.406	17.565	17.565	1.136	H1-1b
273	3	B3	HSS4.5X4.5...	.379	13.899	.007	26.686	y	25.126	172.331	22.689	22.689	1.136	H1-1a
274	3	B4	HSS4.5X4.5...	.396	13.899	.007	0	y	25.126	172.331	22.689	22.689	1.136	H1-1a
275	3	B5	HSS4X4X4	.467	13.14	.007	24.734	y	19.972	151.406	17.565	17.565	1.136	H1-1a
276	3	B6	HSS4X4X4	.104	8.003	.003	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
277	3	B7	HSS4X4X4	.043	8.351	.003	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
278	3	M53	W16X31	.032	0	.009	0	y	184.016	410.4	26.363	202.5	2.005	H1-1b
279	3	B8	HSS4.5X4.5...	.106	13.056	.007	26.112	y	26.243	172.331	22.689	22.689	1.136	H1-1b
280	4	C1	HSS6X6X4	.049	13.25	.000	0	y	158.485	216.297	38.625	38.625	1.72	H1-1b
281	4	C2	HSS6X6X4	.203	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1a
282	4	C3	HSS6X6X4	.096	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
283	4	C4	HSS6X6X4	.055	0	.000	0	y	158.482	216.297	38.625	38.625	1.667	H1-1b
284	4	C5	HSS6X6X4	.080	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
285	4	C6	HSS6X6X4	.407	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1a
286	4	C7	HSS6X6X4	.407	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1a
287	4	C8	HSS6X6X4	.097	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
288	4	C9	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
289	4	C10	HSS6X6X4	.388	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
290	4	C11	HSS6X6X4	.408	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
291	4	C12	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
292	4	C13	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
293	4	C14	HSS6X6X4	.408	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
294	4	C15	HSS6X6X4	.387	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
295	4	C16	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
296	4	C17	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
297	4	C18	HSS6X6X4	.408	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
298	4	C19	HSS6X6X4	.371	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
299	4	C20	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
300	4	C21	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
301	4	C22	HSS6X6X4	.408	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
302	4	C23	HSS6X6X4	.408	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
303	4	C24	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
304	4	C25	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
305	4	C26	HSS6X6X4	.407	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
306	4	C27	HSS6X6X4	.407	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
307	4	C28	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
308	4	C29	HSS6X6X4	.051	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
309	4	C30	HSS6X6X4	.099	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
310	4	C31	HSS6X6X4	.099	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
311	4	C32	HSS6X6X4	.051	0	.000	0	z	158.482	216.297	38.625	38.625	1	H1-1b
312	4	M1	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
313	4	M2	W16X31	.063	10.167	.006	20.333	y	47.052	410.4	26.363	61.333	1.136	H1-1b
314	4	M3	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
315	4	M4	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
316	4	M5	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
317	4	M6	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
318	4	M7	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
319	4	M8	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
320	4	M9	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
321	4	M10	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
322	4	M11	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
323	4	M12	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
324	4	M13	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
325	4	M14	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
326	4	M15	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
327	4	M16	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
328	4	M17	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
329	4	M18	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
330	4	M19	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
331	4	M20	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
332	4	M21	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
333	4	M22	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
334	4	M23	W16X31	.030	10.167	.008	10.167	y	184.016	410.4	26.363	202.5	2.037	H1-1b
335	4	M24	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
336	4	M25	W16X31	.448	11.25	.126	0	y	38.427	410.4	26.363	185.964	1	H1-1b
337	4	M26	W16X31	.455	11.333	.127	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
338	4	M27	W16X31	.455	11.333	.127	0	y	37.864	410.4	26.363	185.964	1	H1-1b
339	4	M28	W16X31	.455	11.333	.127	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
340	4	M29	W16X31	.455	11.333	.127	0	y	37.864	410.4	26.363	185.964	1	H1-1b
341	4	M30	W16X31	.455	11.333	.127	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
342	4	M31	W16X31	.448	11.25	.126	0	y	38.427	410.4	26.363	185.964	1	H1-1b
343	4	M32	W18X35	.732	11.25	.210	0	y	47.414	463.5	30.225	231.83	1	H1-1b
344	4	M33	W18X35	.743	11.333	.212	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
345	4	M34	W18X35	.743	11.333	.212	0	y	46.719	463.5	30.225	231.83	1	H1-1b
346	4	M35	W18X35	.743	11.333	.212	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
347	4	M36	W18X35	.743	11.333	.212	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
348	4	M37	W18X35	.732	11.25	.210	0	y	47.414	463.5	30.225	231.83	1	H1-1b
349	4	M38	W18X35	.732	11.25	.210	0	y	47.414	463.5	30.225	231.83	1	H1-1b
350	4	M39	W18X35	.743	11.333	.212	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
351	4	M40	W18X35	.743	11.333	.212	0	y	46.719	463.5	30.225	231.83	1	H1-1b
352	4	M41	W18X35	.743	11.333	.212	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
353	4	M42	W18X35	.743	11.333	.212	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
354	4	M43	W18X35	.732	11.25	.210	0	y	47.414	463.5	30.225	231.83	1	H1-1b
355	4	M44	W16X31	.621	11.25	.126	0	y	38.427	410.4	26.363	185.964	1	H1-1b
356	4	M45	W16X31	.630	11.333	.127	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
357	4	M46	W16X31	.630	11.333	.127	0	y	37.864	410.4	26.363	185.964	1	H1-1b
358	4	M47	W16X31	.630	11.333	.127	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
359	4	M48	W16X31	.630	11.333	.127	0	y	37.864	410.4	26.363	185.964	1	H1-1b
360	4	M49	W16X31	.630	11.333	.127	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
361	4	M50	W16X31	.621	11.25	.126	0	y	38.427	410.4	26.363	185.964	1	H1-1b
362	4	M51	W18X35	.743	11.333	.212	0	y	46.719	463.5	30.225	231.83	1	H1-1b
363	4	M52	W18X35	.743	11.333	.212	0	y	46.719	463.5	30.225	231.83	1	H1-1b
364	4	B1	HSS5X5X4	.395	12.512	.007	26.112	y	36.808	193.256	28.467	28.467	1.136	H1-1a
365	4	B2	HSS4X4X4	.288	12.64	.007	0	y	20.744	151.406	17.565	17.565	1.136	H1-1a
366	4	B3	HSS4.5X4.5...	.360	13.899	.007	0	y	25.126	172.331	22.689	22.689	1.136	H1-1a
367	4	B4	HSS4.5X4.5...	.364	13.899	.007	0	y	25.126	172.331	22.689	22.689	1.136	H1-1a
368	4	B5	HSS4X4X4	.622	13.14	.007	24.734	y	19.972	151.406	17.565	17.565	1.136	H1-1a
369	4	B6	HSS4X4X4	.059	8.003	.003	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
370	4	B7	HSS4X4X4	.042	8.699	.003	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
371	4	M53	W16X31	.030	0	.008	0	y	184.016	410.4	26.363	202.5	2.037	H1-1b
372	4	B8	HSS4.5X4.5...	.107	13.056	.007	0	y	26.243	172.331	22.689	22.689	1.136	H1-1b
373	5	C1	HSS6X6X4	.049	13.25	.000	0	y	158.485	216.297	38.625	38.625	1.72	H1-1b
374	5	C2	HSS6X6X4	.203	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1a
375	5	C3	HSS6X6X4	.209	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1a
376	5	C4	HSS6X6X4	.052	0	.000	0	y	158.482	216.297	38.625	38.625	1.667	H1-1b
377	5	C5	HSS6X6X4	.082	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
378	5	C6	HSS6X6X4	.407	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
379	5	C7	HSS6X6X4	.407	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
380	5	C8	HSS6X6X4	.097	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
381	5	C9	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
382	5	C10	HSS6X6X4	.383	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
383	5	C11	HSS6X6X4	.408	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
384	5	C12	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
385	5	C13	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
386	5	C14	HSS6X6X4	.408	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
387	5	C15	HSS6X6X4	.382	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
388	5	C16	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
389	5	C17	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
390	5	C18	HSS6X6X4	.408	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
391	5	C19	HSS6X6X4	.385	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
392	5	C20	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
393	5	C21	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
394	5	C22	HSS6X6X4	.408	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
395	5	C23	HSS6X6X4	.408	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
396	5	C24	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
397	5	C25	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
398	5	C26	HSS6X6X4	.407	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1a

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
399	5	C27	HSS6X6X4	.407	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1a
400	5	C28	HSS6X6X4	.097	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
401	5	C29	HSS6X6X4	.051	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
402	5	C30	HSS6X6X4	.099	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
403	5	C31	HSS6X6X4	.099	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
404	5	C32	HSS6X6X4	.051	0	.000	0	z	158.482	216.297	38.625	38.625	1.667	H1-1b
405	5	M1	W16X31	.235	10.167	.007	0	z	47.052	410.4	26.363	61.333	1.136	H1-1b
406	5	M2	W16X31	.235	10.167	.007	20.333	z	47.052	410.4	26.363	61.333	1.136	H1-1b
407	5	M3	W16X31	.235	10.167	.007	0	z	47.052	410.4	26.363	61.333	1.136	H1-1b
408	5	M4	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
409	5	M5	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
410	5	M6	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
411	5	M7	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
412	5	M8	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
413	5	M9	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
414	5	M10	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
415	5	M11	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
416	5	M12	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
417	5	M13	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
418	5	M14	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
419	5	M15	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
420	5	M16	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
421	5	M17	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
422	5	M18	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
423	5	M19	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
424	5	M20	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
425	5	M21	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
426	5	M22	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
427	5	M23	W16X31	.030	10.167	.008	10.167	y	184.016	410.4	26.363	202.5	2.037	H1-1b
428	5	M24	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
429	5	M25	W16X31	.448	11.25	.126	0	y	38.427	410.4	26.363	185.964	1	H1-1b
430	5	M26	W16X31	.455	11.333	.127	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
431	5	M27	W16X31	.455	11.333	.127	0	y	37.864	410.4	26.363	185.964	1	H1-1b
432	5	M28	W16X31	.455	11.333	.127	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
433	5	M29	W16X31	.455	11.333	.127	0	y	37.864	410.4	26.363	185.964	1	H1-1b
434	5	M30	W16X31	.455	11.333	.127	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
435	5	M31	W16X31	.448	11.25	.126	0	y	38.427	410.4	26.363	185.964	1	H1-1b
436	5	M32	W18X35	.732	11.25	.210	0	y	47.414	463.5	30.225	231.83	1	H1-1b
437	5	M33	W18X35	.743	11.333	.212	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
438	5	M34	W18X35	.743	11.333	.212	0	y	46.719	463.5	30.225	231.83	1	H1-1b
439	5	M35	W18X35	.743	11.333	.212	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
440	5	M36	W18X35	.743	11.333	.212	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
441	5	M37	W18X35	.732	11.25	.210	0	y	47.414	463.5	30.225	231.83	1	H1-1b
442	5	M38	W18X35	.732	11.25	.210	0	y	47.414	463.5	30.225	231.83	1	H1-1b
443	5	M39	W18X35	.743	11.333	.212	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
444	5	M40	W18X35	.743	11.333	.212	0	y	46.719	463.5	30.225	231.83	1	H1-1b
445	5	M41	W18X35	.743	11.333	.212	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
446	5	M42	W18X35	.743	11.333	.212	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
447	5	M43	W18X35	.732	11.25	.210	0	y	47.414	463.5	30.225	231.83	1	H1-1b
448	5	M44	W16X31	.448	11.25	.126	0	y	38.427	410.4	26.363	185.964	1	H1-1b
449	5	M45	W16X31	.455	11.333	.127	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
450	5	M46	W16X31	.455	11.333	.127	0	y	37.864	410.4	26.363	185.964	1	H1-1b
451	5	M47	W16X31	.455	11.333	.127	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
452	5	M48	W16X31	.455	11.333	.127	0	y	37.864	410.4	26.363	185.964	1	H1-1b
453	5	M49	W16X31	.455	11.333	.127	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
454	5	M50	W16X31	.448	11.25	.126	0	y	38.427	410.4	26.363	185.964	1	H1-1b
455	5	M51	W18X35	.743	11.333	.212	0	y	46.719	463.5	30.225	231.83	1	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
456	5	M52	W18X35	.743	11.333	.212	0	y	46.719	463.5	30.225	231.83	1	H1-1b
457	5	B1	HSS5X5X4	.361	12.512	.007	26.112	y	36.808	193.256	28.467	28.467	1.136	H1-1a
458	5	B2	HSS4X4X4	.100	12.135	.007	0	y	20.744	151.406	17.565	17.565	1.136	H1-1b
459	5	B3	HSS4.5X4.5...	.414	13.899	.007	26.686	y	25.126	172.331	22.689	22.689	1.136	H1-1a
460	5	B4	HSS4.5X4.5...	.430	13.899	.007	0	y	25.126	172.331	22.689	22.689	1.136	H1-1a
461	5	B5	HSS4X4X4	.437	13.14	.007	24.734	y	19.972	151.406	17.565	17.565	1.136	H1-1a
462	5	B6	HSS4X4X4	.098	8.003	.003	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
463	5	B7	HSS4X4X4	.042	8.351	.003	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
464	5	M53	W16X31	.030	0	.008	0	y	184.016	410.4	26.363	202.5	2.037	H1-1b
465	5	B8	HSS4.5X4.5...	.103	12.784	.007	0	y	26.243	172.331	22.689	22.689	1.136	H1-1b
466	6	C1	HSS6X6X4	.020	13.25	.000	0	y	158.485	216.297	38.625	38.625	1.72	H1-1b
467	6	C2	HSS6X6X4	.047	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
468	6	C3	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
469	6	C4	HSS6X6X4	.025	0	.000	0	y	158.482	216.297	38.625	38.625	1.667	H1-1b
470	6	C5	HSS6X6X4	.032	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
471	6	C6	HSS6X6X4	.088	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
472	6	C7	HSS6X6X4	.088	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
473	6	C8	HSS6X6X4	.037	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
474	6	C9	HSS6X6X4	.038	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
475	6	C10	HSS6X6X4	.084	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
476	6	C11	HSS6X6X4	.088	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
477	6	C12	HSS6X6X4	.038	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
478	6	C13	HSS6X6X4	.038	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
479	6	C14	HSS6X6X4	.088	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
480	6	C15	HSS6X6X4	.085	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
481	6	C16	HSS6X6X4	.038	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
482	6	C17	HSS6X6X4	.038	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
483	6	C18	HSS6X6X4	.088	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
484	6	C19	HSS6X6X4	.070	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
485	6	C20	HSS6X6X4	.038	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
486	6	C21	HSS6X6X4	.038	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
487	6	C22	HSS6X6X4	.088	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
488	6	C23	HSS6X6X4	.088	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
489	6	C24	HSS6X6X4	.038	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
490	6	C25	HSS6X6X4	.037	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
491	6	C26	HSS6X6X4	.088	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
492	6	C27	HSS6X6X4	.088	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
493	6	C28	HSS6X6X4	.037	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
494	6	C29	HSS6X6X4	.021	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
495	6	C30	HSS6X6X4	.044	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
496	6	C31	HSS6X6X4	.044	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
497	6	C32	HSS6X6X4	.021	0	.000	0	z	158.482	216.297	38.625	38.625	1.667	H1-1b
498	6	M1	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
499	6	M2	W16X31	.063	10.167	.006	20.333	y	47.052	410.4	26.363	61.333	1.136	H1-1b
500	6	M3	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
501	6	M4	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
502	6	M5	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
503	6	M6	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
504	6	M7	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
505	6	M8	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
506	6	M9	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
507	6	M10	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
508	6	M11	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
509	6	M12	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
510	6	M13	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
511	6	M14	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
512	6	M15	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
513	6	M16	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
514	6	M17	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
515	6	M18	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
516	6	M19	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
517	6	M20	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
518	6	M21	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
519	6	M22	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
520	6	M23	W16X31	.015	10.167	.006	10.167	y	184.016	410.4	26.363	202.5	2.622	H1-1b
521	6	M24	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
522	6	M25	W16X31	.165	11.25	.046	0	y	38.427	410.4	26.363	185.964	1	H1-1b
523	6	M26	W16X31	.167	11.333	.046	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
524	6	M27	W16X31	.167	11.333	.046	0	y	37.864	410.4	26.363	185.964	1	H1-1b
525	6	M28	W16X31	.167	11.333	.046	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
526	6	M29	W16X31	.167	11.333	.046	0	y	37.864	410.4	26.363	185.964	1	H1-1b
527	6	M30	W16X31	.167	11.333	.046	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
528	6	M31	W16X31	.165	11.25	.046	0	y	38.427	410.4	26.363	185.964	1	H1-1b
529	6	M32	W18X35	.308	11.25	.088	22.5	y	47.414	463.5	30.225	231.83	1	H1-1b
530	6	M33	W18X35	.312	11.333	.089	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
531	6	M34	W18X35	.312	11.333	.089	0	y	46.719	463.5	30.225	231.83	1	H1-1b
532	6	M35	W18X35	.312	11.333	.089	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
533	6	M36	W18X35	.312	11.333	.089	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
534	6	M37	W18X35	.308	11.25	.088	22.5	y	47.414	463.5	30.225	231.83	1	H1-1b
535	6	M38	W18X35	.308	11.25	.088	22.5	y	47.414	463.5	30.225	231.83	1	H1-1b
536	6	M39	W18X35	.312	11.333	.089	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
537	6	M40	W18X35	.312	11.333	.089	0	y	46.719	463.5	30.225	231.83	1	H1-1b
538	6	M41	W18X35	.312	11.333	.089	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
539	6	M42	W18X35	.312	11.333	.089	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
540	6	M43	W18X35	.308	11.25	.088	22.5	y	47.414	463.5	30.225	231.83	1	H1-1b
541	6	M44	W16X31	.510	11.25	.046	0	y	38.427	410.4	26.363	185.964	1	H1-1b
542	6	M45	W16X31	.518	11.333	.046	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
543	6	M46	W16X31	.518	11.333	.046	0	y	37.864	410.4	26.363	185.964	1	H1-1b
544	6	M47	W16X31	.518	11.333	.046	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
545	6	M48	W16X31	.518	11.333	.046	0	y	37.864	410.4	26.363	185.964	1	H1-1b
546	6	M49	W16X31	.518	11.333	.046	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
547	6	M50	W16X31	.510	11.25	.046	0	y	38.427	410.4	26.363	185.964	1	H1-1b
548	6	M51	W18X35	.312	11.333	.089	0	y	46.719	463.5	30.225	231.83	1	H1-1b
549	6	M52	W18X35	.312	11.333	.089	0	y	46.719	463.5	30.225	231.83	1	H1-1b
550	6	B1	HSS5X5X4	.146	12.784	.007	0	y	36.808	193.256	28.467	28.467	1.136	H1-1b
551	6	B2	HSS4X4X4	.558	12.64	.007	24.27	y	20.744	151.406	17.565	17.565	1.136	H1-1a
552	6	B3	HSS4.5X4.5...	.165	13.621	.007	0	y	25.126	172.331	22.689	22.689	1.136	H1-1b
553	6	B4	HSS4.5X4.5...	.158	13.621	.007	0	y	25.126	172.331	22.689	22.689	1.136	H1-1b
554	6	B5	HSS4X4X4	.605	13.14	.007	24.734	y	19.972	151.406	17.565	17.565	1.136	H1-1a
555	6	B6	HSS4X4X4	.046	8.351	.003	16.701	y	43.805	151.406	17.565	17.565	1.136	H1-1b
556	6	B7	HSS4X4X4	.104	8.699	.003	16.701	y	43.805	151.406	17.565	17.565	1.136	H1-1b
557	6	M53	W16X31	.015	0	.006	0	y	184.016	410.4	26.363	202.5	2.622	H1-1b
558	6	B8	HSS4.5X4.5...	.106	13.056	.007	0	y	26.243	172.331	22.689	22.689	1.136	H1-1b
559	7	C1	HSS6X6X4	.020	13.25	.000	0	y	158.485	216.297	38.625	38.625	1.72	H1-1b
560	7	C2	HSS6X6X4	.047	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
561	7	C3	HSS6X6X4	.048	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
562	7	C4	HSS6X6X4	.019	0	.000	0	y	158.482	216.297	38.625	38.625	1.667	H1-1b
563	7	C5	HSS6X6X4	.036	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
564	7	C6	HSS6X6X4	.088	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
565	7	C7	HSS6X6X4	.088	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
566	7	C8	HSS6X6X4	.037	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
567	7	C9	HSS6X6X4	.038	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
568	7	C10	HSS6X6X4	.080	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
569	7	C11	HSS6X6X4	.088	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
570	7	C12	HSS6X6X4	.038	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
571	7	C13	HSS6X6X4	.038	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
572	7	C14	HSS6X6X4	.088	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
573	7	C15	HSS6X6X4	.079	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
574	7	C16	HSS6X6X4	.038	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
575	7	C17	HSS6X6X4	.038	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
576	7	C18	HSS6X6X4	.088	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
577	7	C19	HSS6X6X4	.084	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
578	7	C20	HSS6X6X4	.038	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
579	7	C21	HSS6X6X4	.038	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
580	7	C22	HSS6X6X4	.088	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
581	7	C23	HSS6X6X4	.088	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
582	7	C24	HSS6X6X4	.038	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
583	7	C25	HSS6X6X4	.037	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
584	7	C26	HSS6X6X4	.088	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
585	7	C27	HSS6X6X4	.088	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
586	7	C28	HSS6X6X4	.037	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
587	7	C29	HSS6X6X4	.021	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
588	7	C30	HSS6X6X4	.044	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
589	7	C31	HSS6X6X4	.044	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
590	7	C32	HSS6X6X4	.021	0	.000	0	z	158.482	216.297	38.625	38.625	1	H1-1b
591	7	M1	W16X31	.408	10.167	.014	0	z	47.052	410.4	26.363	61.333	1.136	H1-1b
592	7	M2	W16X31	.408	10.167	.014	20.333	z	47.052	410.4	26.363	61.333	1.136	H1-1b
593	7	M3	W16X31	.408	10.167	.014	0	z	47.052	410.4	26.363	61.333	1.136	H1-1b
594	7	M4	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
595	7	M5	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
596	7	M6	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
597	7	M7	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
598	7	M8	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
599	7	M9	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
600	7	M10	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
601	7	M11	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
602	7	M12	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
603	7	M13	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
604	7	M14	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
605	7	M15	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
606	7	M16	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
607	7	M17	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
608	7	M18	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
609	7	M19	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
610	7	M20	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
611	7	M21	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
612	7	M22	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
613	7	M23	W16X31	.015	10.167	.006	10.167	y	184.016	410.4	26.363	202.5	2.622	H1-1b
614	7	M24	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
615	7	M25	W16X31	.165	11.25	.046	0	y	38.427	410.4	26.363	185.964	1	H1-1b
616	7	M26	W16X31	.167	11.333	.046	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
617	7	M27	W16X31	.167	11.333	.046	0	y	37.864	410.4	26.363	185.964	1	H1-1b
618	7	M28	W16X31	.167	11.333	.046	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
619	7	M29	W16X31	.167	11.333	.046	0	y	37.864	410.4	26.363	185.964	1	H1-1b
620	7	M30	W16X31	.167	11.333	.046	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
621	7	M31	W16X31	.165	11.25	.046	0	y	38.427	410.4	26.363	185.964	1	H1-1b
622	7	M32	W18X35	.308	11.25	.088	22.5	y	47.414	463.5	30.225	231.83	1	H1-1b
623	7	M33	W18X35	.312	11.333	.089	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
624	7	M34	W18X35	.312	11.333	.089	0	y	46.719	463.5	30.225	231.83	1	H1-1b
625	7	M35	W18X35	.312	11.333	.089	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
626	7	M36	W18X35	.312	11.333	.089	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
627	7	M37	W18X35	.308	11.25	.088	22.5	y	47.414	463.5	30.225	231.83	1	H1-1b
628	7	M38	W18X35	.308	11.25	.088	22.5	y	47.414	463.5	30.225	231.83	1	H1-1b
629	7	M39	W18X35	.312	11.333	.089	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
630	7	M40	W18X35	.312	11.333	.089	0	y	46.719	463.5	30.225	231.83	1	H1-1b
631	7	M41	W18X35	.312	11.333	.089	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
632	7	M42	W18X35	.312	11.333	.089	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
633	7	M43	W18X35	.308	11.25	.088	22.5	y	47.414	463.5	30.225	231.83	1	H1-1b
634	7	M44	W16X31	.165	11.25	.046	0	y	38.427	410.4	26.363	185.964	1	H1-1b
635	7	M45	W16X31	.167	11.333	.046	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
636	7	M46	W16X31	.167	11.333	.046	0	y	37.864	410.4	26.363	185.964	1	H1-1b
637	7	M47	W16X31	.167	11.333	.046	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
638	7	M48	W16X31	.167	11.333	.046	0	y	37.864	410.4	26.363	185.964	1	H1-1b
639	7	M49	W16X31	.167	11.333	.046	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
640	7	M50	W16X31	.165	11.25	.046	0	y	38.427	410.4	26.363	185.964	1	H1-1b
641	7	M51	W18X35	.312	11.333	.089	0	y	46.719	463.5	30.225	231.83	1	H1-1b
642	7	M52	W18X35	.312	11.333	.089	0	y	46.719	463.5	30.225	231.83	1	H1-1b
643	7	B1	HSS5X5X4	.112	12.784	.007	0	y	36.808	193.256	28.467	28.467	1.136	H1-1b
644	7	B2	HSS4X4X4	.098	12.135	.007	0	y	20.744	151.406	17.565	17.565	1.136	H1-1b
645	7	B3	HSS4.5X4.5...	.323	13.899	.007	26.686	y	25.126	172.331	22.689	22.689	1.136	H1-1a
646	7	B4	HSS4.5X4.5...	.332	13.899	.007	0	y	25.126	172.331	22.689	22.689	1.136	H1-1a
647	7	B5	HSS4X4X4	.173	12.625	.007	24.734	y	19.972	151.406	17.565	17.565	1.136	H1-1b
648	7	B6	HSS4X4X4	.066	8.003	.003	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
649	7	B7	HSS4X4X4	.035	8.351	.003	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
650	7	M53	W16X31	.015	0	.006	0	y	184.016	410.4	26.363	202.5	2.622	H1-1b
651	7	B8	HSS4.5X4.5...	.148	12.784	.007	26.112	y	26.243	172.331	22.689	22.689	1.136	H1-1b
652	8	C1	HSS6X6X4	.034	0	.000	0	y	158.485	216.297	38.625	38.625	1.72	H1-1b
653	8	C2	HSS6X6X4	.064	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
654	8	C3	HSS6X6X4	.235	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1a
655	8	C4	HSS6X6X4	.033	0	.000	0	y	158.482	216.297	38.625	38.625	1.667	H1-1b
656	8	C5	HSS6X6X4	.049	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
657	8	C6	HSS6X6X4	.247	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
658	8	C7	HSS6X6X4	.247	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
659	8	C8	HSS6X6X4	.063	0	.000	0	y	158.485	216.297	38.625	38.625	1.666	H1-1b
660	8	C9	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
661	8	C10	HSS6X6X4	.239	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
662	8	C11	HSS6X6X4	.248	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1a
663	8	C12	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
664	8	C13	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
665	8	C14	HSS6X6X4	.248	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
666	8	C15	HSS6X6X4	.234	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
667	8	C16	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
668	8	C17	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
669	8	C18	HSS6X6X4	.248	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
670	8	C19	HSS6X6X4	.326	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
671	8	C20	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
672	8	C21	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
673	8	C22	HSS6X6X4	.248	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
674	8	C23	HSS6X6X4	.248	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1a
675	8	C24	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
676	8	C25	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
677	8	C26	HSS6X6X4	.247	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
678	8	C27	HSS6X6X4	.247	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
679	8	C28	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
680	8	C29	HSS6X6X4	.034	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
681	8	C30	HSS6X6X4	.061	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
682	8	C31	HSS6X6X4	.061	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
683	8	C32	HSS6X6X4	.034	0	.000	0	z	158.482	216.297	38.625	38.625	1.667	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
684	8	M1	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
685	8	M2	W16X31	.063	10.167	.006	20.333	y	47.052	410.4	26.363	61.333	1.136	H1-1b
686	8	M3	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
687	8	M4	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
688	8	M5	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
689	8	M6	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
690	8	M7	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
691	8	M8	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
692	8	M9	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
693	8	M10	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
694	8	M11	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
695	8	M12	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
696	8	M13	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
697	8	M14	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
698	8	M15	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
699	8	M16	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
700	8	M17	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
701	8	M18	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
702	8	M19	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
703	8	M20	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
704	8	M21	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
705	8	M22	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
706	8	M23	W16X31	.019	10.167	.007	10.167	y	184.016	410.4	26.363	202.5	2.308	H1-1b
707	8	M24	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
708	8	M25	W16X31	.284	11.25	.080	0	y	38.427	410.4	26.363	185.964	1	H1-1b
709	8	M26	W16X31	.289	11.333	.080	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
710	8	M27	W16X31	.289	11.333	.080	0	y	37.864	410.4	26.363	185.964	1	H1-1b
711	8	M28	W16X31	.289	11.333	.080	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
712	8	M29	W16X31	.289	11.333	.080	0	y	37.864	410.4	26.363	185.964	1	H1-1b
713	8	M30	W16X31	.289	11.333	.080	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
714	8	M31	W16X31	.284	11.25	.080	0	y	38.427	410.4	26.363	185.964	1	H1-1b
715	8	M32	W18X35	.439	11.25	.126	0	y	47.414	463.5	30.225	231.83	1	H1-1b
716	8	M33	W18X35	.445	11.333	.127	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
717	8	M34	W18X35	.445	11.333	.127	0	y	46.719	463.5	30.225	231.83	1	H1-1b
718	8	M35	W18X35	.445	11.333	.127	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
719	8	M36	W18X35	.445	11.333	.127	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
720	8	M37	W18X35	.439	11.25	.126	0	y	47.414	463.5	30.225	231.83	1	H1-1b
721	8	M38	W18X35	.439	11.25	.126	0	y	47.414	463.5	30.225	231.83	1	H1-1b
722	8	M39	W18X35	.445	11.333	.127	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
723	8	M40	W18X35	.445	11.333	.127	0	y	46.719	463.5	30.225	231.83	1	H1-1b
724	8	M41	W18X35	.445	11.333	.127	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
725	8	M42	W18X35	.445	11.333	.127	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
726	8	M43	W18X35	.439	11.25	.126	0	y	47.414	463.5	30.225	231.83	1	H1-1b
727	8	M44	W16X31	.284	11.25	.080	0	y	38.427	410.4	26.363	185.964	1	H1-1b
728	8	M45	W16X31	.289	11.333	.080	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
729	8	M46	W16X31	.289	11.333	.080	0	y	37.864	410.4	26.363	185.964	1	H1-1b
730	8	M47	W16X31	.289	11.333	.080	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
731	8	M48	W16X31	.289	11.333	.080	0	y	37.864	410.4	26.363	185.964	1	H1-1b
732	8	M49	W16X31	.289	11.333	.080	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
733	8	M50	W16X31	.284	11.25	.080	0	y	38.427	410.4	26.363	185.964	1	H1-1b
734	8	M51	W18X35	.445	11.333	.127	0	y	46.719	463.5	30.225	231.83	1	H1-1b
735	8	M52	W18X35	.445	11.333	.127	0	y	46.719	463.5	30.225	231.83	1	H1-1b
736	8	B1	HSS5X5X4	.335	12.512	.007	0	y	36.808	193.256	28.467	28.467	1.136	H1-1a
737	8	B2	HSS4X4X4	.289	12.135	.007	24.27	y	20.744	151.406	17.565	17.565	1.136	H1-1a
738	8	B3	HSS4.5X4.5...	.175	13.621	.007	26.686	y	25.126	172.331	22.689	22.689	1.136	H1-1b
739	8	B4	HSS4.5X4.5...	.238	23.628	.007	0	y	25.126	172.331	22.689	22.689	1.136	H1-1a
740	8	B5	HSS4X4X4	.165	12.367	.007	24.734	y	19.972	151.406	17.565	17.565	1.136	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
741	8	B6	HSS4X4X4	.711	7.829	.003	0	y	43.805	151.406	17.565	17.565	1.136	H1-1a
742	8	B7	HSS4X4X4	.124	8.351	.003	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
743	8	M53	W16X31	.019	0	.007	0	y	184.016	410.4	26.363	202.5	2.308	H1-1b
744	8	B8	HSS4.5X4.5...	.121	12.784	.007	0	y	26.243	172.331	22.689	22.689	1.136	H1-1b
745	9	C1	HSS6X6X4	.034	0	.000	0	y	158.485	216.297	38.625	38.625	1.72	H1-1b
746	9	C2	HSS6X6X4	.064	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
747	9	C3	HSS6X6X4	.065	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
748	9	C4	HSS6X6X4	.072	0	.000	0	y	158.482	216.297	38.625	38.625	1.667	H1-1b
749	9	C5	HSS6X6X4	.012	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
750	9	C6	HSS6X6X4	.247	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
751	9	C7	HSS6X6X4	.247	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
752	9	C8	HSS6X6X4	.063	0	.000	0	y	158.485	216.297	38.625	38.625	1.666	H1-1b
753	9	C9	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
754	9	C10	HSS6X6X4	.311	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
755	9	C11	HSS6X6X4	.248	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
756	9	C12	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
757	9	C13	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
758	9	C14	HSS6X6X4	.248	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
759	9	C15	HSS6X6X4	.311	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
760	9	C16	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
761	9	C17	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
762	9	C18	HSS6X6X4	.248	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
763	9	C19	HSS6X6X4	.235	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
764	9	C20	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
765	9	C21	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
766	9	C22	HSS6X6X4	.248	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
767	9	C23	HSS6X6X4	.248	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
768	9	C24	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
769	9	C25	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
770	9	C26	HSS6X6X4	.247	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
771	9	C27	HSS6X6X4	.247	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1a
772	9	C28	HSS6X6X4	.063	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
773	9	C29	HSS6X6X4	.034	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
774	9	C30	HSS6X6X4	.061	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
775	9	C31	HSS6X6X4	.061	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
776	9	C32	HSS6X6X4	.034	0	.000	0	z	158.482	216.297	38.625	38.625	1	H1-1b
777	9	M1	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
778	9	M2	W16X31	.063	10.167	.006	20.333	y	47.052	410.4	26.363	61.333	1.136	H1-1b
779	9	M3	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
780	9	M4	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
781	9	M5	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
782	9	M6	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
783	9	M7	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
784	9	M8	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
785	9	M9	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
786	9	M10	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
787	9	M11	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
788	9	M12	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
789	9	M13	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
790	9	M14	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
791	9	M15	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
792	9	M16	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
793	9	M17	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
794	9	M18	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
795	9	M19	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
796	9	M20	W12X16	.159	10.167	.005	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
797	9	M21	W12X16	.159	10.167	.005	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
798	9	M22	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
799	9	M23	W16X31	.019	10.167	.006	10.167	y	184.016	410.4	26.363	202.5	2.309	H1-1b
800	9	M24	W16X31	.063	10.167	.006	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
801	9	M25	W16X31	.284	11.25	.080	0	y	38.427	410.4	26.363	185.964	1	H1-1b
802	9	M26	W16X31	.289	11.333	.080	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
803	9	M27	W16X31	.289	11.333	.080	0	y	37.864	410.4	26.363	185.964	1	H1-1b
804	9	M28	W16X31	.289	11.333	.080	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
805	9	M29	W16X31	.289	11.333	.080	0	y	37.864	410.4	26.363	185.964	1	H1-1b
806	9	M30	W16X31	.289	11.333	.080	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
807	9	M31	W16X31	.284	11.25	.080	0	y	38.427	410.4	26.363	185.964	1	H1-1b
808	9	M32	W18X35	.439	11.25	.126	0	y	47.414	463.5	30.225	231.83	1	H1-1b
809	9	M33	W18X35	.445	11.333	.127	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
810	9	M34	W18X35	.445	11.333	.127	0	y	46.719	463.5	30.225	231.83	1	H1-1b
811	9	M35	W18X35	.445	11.333	.127	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
812	9	M36	W18X35	.445	11.333	.127	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
813	9	M37	W18X35	.439	11.25	.126	0	y	47.414	463.5	30.225	231.83	1	H1-1b
814	9	M38	W18X35	.439	11.25	.126	0	y	47.414	463.5	30.225	231.83	1	H1-1b
815	9	M39	W18X35	.445	11.333	.127	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
816	9	M40	W18X35	.445	11.333	.127	0	y	46.719	463.5	30.225	231.83	1	H1-1b
817	9	M41	W18X35	.445	11.333	.127	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
818	9	M42	W18X35	.445	11.333	.127	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
819	9	M43	W18X35	.439	11.25	.126	0	y	47.414	463.5	30.225	231.83	1	H1-1b
820	9	M44	W16X31	.284	11.25	.080	0	y	38.427	410.4	26.363	185.964	1	H1-1b
821	9	M45	W16X31	.289	11.333	.080	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
822	9	M46	W16X31	.289	11.333	.080	0	y	37.864	410.4	26.363	185.964	1	H1-1b
823	9	M47	W16X31	.289	11.333	.080	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
824	9	M48	W16X31	.289	11.333	.080	0	y	37.864	410.4	26.363	185.964	1	H1-1b
825	9	M49	W16X31	.289	11.333	.080	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
826	9	M50	W16X31	.284	11.25	.080	0	y	38.427	410.4	26.363	185.964	1	H1-1b
827	9	M51	W18X35	.445	11.333	.127	0	y	46.719	463.5	30.225	231.83	1	H1-1b
828	9	M52	W18X35	.445	11.333	.127	0	y	46.719	463.5	30.225	231.83	1	H1-1b
829	9	B1	HSS5X5X4	.957	12.512	.007	0	y	36.808	193.256	28.467	28.467	1.136	H1-1a
830	9	B2	HSS4X4X4	.097	12.135	.007	0	y	20.744	151.406	17.565	17.565	1.136	H1-1b
831	9	B3	HSS4.5X4.5...	.154	13.343	.007	0	y	25.126	172.331	22.689	22.689	1.136	H1-1b
832	9	B4	HSS4.5X4.5...	.154	13.343	.007	0	y	25.126	172.331	22.689	22.689	1.136	H1-1b
833	9	B5	HSS4X4X4	.301	13.14	.007	24.734	y	19.972	151.406	17.565	17.565	1.136	H1-1a
834	9	B6	HSS4X4X4	.081	8.003	.003	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
835	9	B7	HSS4X4X4	.039	8.351	.003	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
836	9	M53	W16X31	.019	0	.006	0	y	184.016	410.4	26.363	202.5	2.309	H1-1b
837	9	B8	HSS4.5X4.5...	.169	13.056	.007	0	y	26.243	172.331	22.689	22.689	1.136	H1-1b
838	10	C1	HSS6X6X4	.007	0	.000	0	y	158.485	216.297	38.625	38.625	1.72	H1-1b
839	10	C2	HSS6X6X4	.015	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
840	10	C3	HSS6X6X4	.002	13.25	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
841	10	C4	HSS6X6X4	.008	0	.000	0	y	158.482	216.297	38.625	38.625	1.667	H1-1b
842	10	C5	HSS6X6X4	.007	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
843	10	C6	HSS6X6X4	.024	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
844	10	C7	HSS6X6X4	.024	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
845	10	C8	HSS6X6X4	.006	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
846	10	C9	HSS6X6X4	.006	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
847	10	C10	HSS6X6X4	.023	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
848	10	C11	HSS6X6X4	.024	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
849	10	C12	HSS6X6X4	.006	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
850	10	C13	HSS6X6X4	.006	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
851	10	C14	HSS6X6X4	.024	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
852	10	C15	HSS6X6X4	.024	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
853	10	C16	HSS6X6X4	.006	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
854	10	C17	HSS6X6X4	.006	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
855	10	C18	HSS6X6X4	.024	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
856	10	C19	HSS6X6X4	.010	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
857	10	C20	HSS6X6X4	.006	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
858	10	C21	HSS6X6X4	.006	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
859	10	C22	HSS6X6X4	.024	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
860	10	C23	HSS6X6X4	.024	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
861	10	C24	HSS6X6X4	.006	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
862	10	C25	HSS6X6X4	.006	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
863	10	C26	HSS6X6X4	.024	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
864	10	C27	HSS6X6X4	.024	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
865	10	C28	HSS6X6X4	.006	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
866	10	C29	HSS6X6X4	.005	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
867	10	C30	HSS6X6X4	.014	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
868	10	C31	HSS6X6X4	.014	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
869	10	C32	HSS6X6X4	.005	0	.000	0	z	158.482	216.297	38.625	38.625	1.667	H1-1b
870	10	M1	W16X31	.047	10.167	.005	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
871	10	M2	W16X31	.047	10.167	.005	20.333	y	47.052	410.4	26.363	61.333	1.136	H1-1b
872	10	M3	W16X31	.047	10.167	.005	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
873	10	M4	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
874	10	M5	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
875	10	M6	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
876	10	M7	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
877	10	M8	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
878	10	M9	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
879	10	M10	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
880	10	M11	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
881	10	M12	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
882	10	M13	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
883	10	M14	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
884	10	M15	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
885	10	M16	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
886	10	M17	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
887	10	M18	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
888	10	M19	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
889	10	M20	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
890	10	M21	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
891	10	M22	W16X31	.047	10.167	.005	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
892	10	M23	W16X31	.006	10.167	.003	10.167	y	184.016	410.4	26.363	202.5	2.767	H1-1b
893	10	M24	W16X31	.047	10.167	.005	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
894	10	M25	W16X31	.017	11.25	.005	22.5	y	38.427	410.4	26.363	185.964	1	H1-1b
895	10	M26	W16X31	.017	11.333	.005	0	y	37.864	410.4	26.363	185.964	1	H1-1b
896	10	M27	W16X31	.017	11.333	.005	0	y	37.864	410.4	26.363	185.964	1	H1-1b
897	10	M28	W16X31	.017	11.333	.005	0	y	37.864	410.4	26.363	185.964	1	H1-1b
898	10	M29	W16X31	.017	11.333	.005	0	y	37.864	410.4	26.363	185.964	1	H1-1b
899	10	M30	W16X31	.017	11.333	.005	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
900	10	M31	W16X31	.017	11.25	.005	22.5	y	38.427	410.4	26.363	185.964	1	H1-1b
901	10	M32	W18X35	.076	11.25	.022	22.5	y	47.414	463.5	30.225	231.83	1	H1-1b
902	10	M33	W18X35	.077	11.333	.022	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
903	10	M34	W18X35	.077	11.333	.022	0	y	46.719	463.5	30.225	231.83	1	H1-1b
904	10	M35	W18X35	.077	11.333	.022	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
905	10	M36	W18X35	.077	11.333	.022	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
906	10	M37	W18X35	.076	11.25	.022	22.5	y	47.414	463.5	30.225	231.83	1	H1-1b
907	10	M38	W18X35	.076	11.25	.022	22.5	y	47.414	463.5	30.225	231.83	1	H1-1b
908	10	M39	W18X35	.077	11.333	.022	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
909	10	M40	W18X35	.077	11.333	.022	0	y	46.719	463.5	30.225	231.83	1	H1-1b
910	10	M41	W18X35	.077	11.333	.022	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
911	10	M42	W18X35	.077	11.333	.022	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
912	10	M43	W18X35	.076	11.25	.022	22.5	y	47.414	463.5	30.225	231.83	1	H1-1b
913	10	M44	W16X31	.363	11.25	.012	0	z	38.427	410.4	26.363	185.964	1	H1-1b
914	10	M45	W16X31	.368	11.333	.012	22.667	z	37.864	410.4	26.363	185.964	1	H1-1b
915	10	M46	W16X31	.368	11.333	.012	0	z	37.864	410.4	26.363	185.964	1	H1-1b
916	10	M47	W16X31	.368	11.333	.012	22.667	z	37.864	410.4	26.363	185.964	1	H1-1b
917	10	M48	W16X31	.368	11.333	.012	0	z	37.864	410.4	26.363	185.964	1	H1-1b
918	10	M49	W16X31	.368	11.333	.012	22.667	z	37.864	410.4	26.363	185.964	1	H1-1b
919	10	M50	W16X31	.363	11.25	.012	0	z	38.427	410.4	26.363	185.964	1	H1-1b
920	10	M51	W18X35	.077	11.333	.022	0	y	46.719	463.5	30.225	231.83	1	H1-1b
921	10	M52	W18X35	.077	11.333	.022	0	y	46.719	463.5	30.225	231.83	1	H1-1b
922	10	B1	HSS5X5X4	.071	12.784	.006	0	y	36.808	193.256	28.467	28.467	1.136	H1-1b
923	10	B2	HSS4X4X4	.547	12.64	.005	24.27	y	20.744	151.406	17.565	17.565	1.136	H1-1a
924	10	B3	HSS4.5X4.5...	.098	13.621	.006	0	y	25.126	172.331	22.689	22.689	1.136	H1-1b
925	10	B4	HSS4.5X4.5...	.088	13.621	.006	0	y	25.126	172.331	22.689	22.689	1.136	H1-1b
926	10	B5	HSS4X4X4	.471	13.14	.005	24.734	y	19.972	151.406	17.565	17.565	1.136	H1-1a
927	10	B6	HSS4X4X4	.044	8.351	.003	16.701	y	43.805	151.406	17.565	17.565	1.136	H1-1b
928	10	B7	HSS4X4X4	.106	8.699	.003	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
929	10	M53	W16X31	.006	0	.003	0	y	184.016	410.4	26.363	202.5	2.767	H1-1b
930	10	B8	HSS4.5X4.5...	.079	13.056	.006	0	y	26.243	172.331	22.689	22.689	1.136	H1-1b
931	11	C1	HSS6X6X4	.007	0	.000	0	y	158.485	216.297	38.625	38.625	1.72	H1-1b
932	11	C2	HSS6X6X4	.015	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
933	11	C3	HSS6X6X4	.016	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
934	11	C4	HSS6X6X4	.001	0	.000	0	y	158.482	216.297	38.625	38.625	1.667	H1-1b
935	11	C5	HSS6X6X4	.010	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
936	11	C6	HSS6X6X4	.024	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
937	11	C7	HSS6X6X4	.024	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
938	11	C8	HSS6X6X4	.006	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
939	11	C9	HSS6X6X4	.006	0	.000	0	y	158.485	216.297	38.625	38.625	1	H1-1b
940	11	C10	HSS6X6X4	.019	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
941	11	C11	HSS6X6X4	.024	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
942	11	C12	HSS6X6X4	.006	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
943	11	C13	HSS6X6X4	.006	0	.000	0	y	158.485	216.297	38.625	38.625	1	H1-1b
944	11	C14	HSS6X6X4	.024	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
945	11	C15	HSS6X6X4	.019	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
946	11	C16	HSS6X6X4	.006	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
947	11	C17	HSS6X6X4	.006	0	.000	0	y	158.485	216.297	38.625	38.625	1	H1-1b
948	11	C18	HSS6X6X4	.024	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
949	11	C19	HSS6X6X4	.023	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
950	11	C20	HSS6X6X4	.006	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
951	11	C21	HSS6X6X4	.006	0	.000	0	y	158.485	216.297	38.625	38.625	1	H1-1b
952	11	C22	HSS6X6X4	.024	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
953	11	C23	HSS6X6X4	.024	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
954	11	C24	HSS6X6X4	.006	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
955	11	C25	HSS6X6X4	.006	0	.000	0	y	158.485	216.297	38.625	38.625	1	H1-1b
956	11	C26	HSS6X6X4	.024	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
957	11	C27	HSS6X6X4	.024	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
958	11	C28	HSS6X6X4	.006	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
959	11	C29	HSS6X6X4	.005	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
960	11	C30	HSS6X6X4	.014	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
961	11	C31	HSS6X6X4	.014	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
962	11	C32	HSS6X6X4	.005	0	.000	0	z	158.482	216.297	38.625	38.625	1	H1-1b
963	11	M1	W16X31	.392	10.167	.014	0	z	47.052	410.4	26.363	61.333	1.136	H1-1b
964	11	M2	W16X31	.392	10.167	.014	20.333	z	47.052	410.4	26.363	61.333	1.136	H1-1b
965	11	M3	W16X31	.392	10.167	.014	0	z	47.052	410.4	26.363	61.333	1.136	H1-1b
966	11	M4	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
967	11	M5	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
968	11	M6	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
969	11	M7	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
970	11	M8	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
971	11	M9	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
972	11	M10	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
973	11	M11	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
974	11	M12	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
975	11	M13	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
976	11	M14	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
977	11	M15	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
978	11	M16	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
979	11	M17	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
980	11	M18	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
981	11	M19	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
982	11	M20	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
983	11	M21	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
984	11	M22	W16X31	.047	10.167	.005	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
985	11	M23	W16X31	.006	10.167	.003	10.167	y	184.016	410.4	26.363	202.5	2.766	H1-1b
986	11	M24	W16X31	.047	10.167	.005	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
987	11	M25	W16X31	.017	11.25	.005	22.5	y	38.427	410.4	26.363	185.964	1	H1-1b
988	11	M26	W16X31	.017	11.333	.005	0	y	37.864	410.4	26.363	185.964	1	H1-1b
989	11	M27	W16X31	.017	11.333	.005	0	y	37.864	410.4	26.363	185.964	1	H1-1b
990	11	M28	W16X31	.017	11.333	.005	0	y	37.864	410.4	26.363	185.964	1	H1-1b
991	11	M29	W16X31	.017	11.333	.005	0	y	37.864	410.4	26.363	185.964	1	H1-1b
992	11	M30	W16X31	.017	11.333	.005	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
993	11	M31	W16X31	.017	11.25	.005	22.5	y	38.427	410.4	26.363	185.964	1	H1-1b
994	11	M32	W18X35	.076	11.25	.022	22.5	y	47.414	463.5	30.225	231.83	1	H1-1b
995	11	M33	W18X35	.077	11.333	.022	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
996	11	M34	W18X35	.077	11.333	.022	0	y	46.719	463.5	30.225	231.83	1	H1-1b
997	11	M35	W18X35	.077	11.333	.022	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
998	11	M36	W18X35	.077	11.333	.022	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
999	11	M37	W18X35	.076	11.25	.022	22.5	y	47.414	463.5	30.225	231.83	1	H1-1b
1000	11	M38	W18X35	.076	11.25	.022	22.5	y	47.414	463.5	30.225	231.83	1	H1-1b
1001	11	M39	W18X35	.077	11.333	.022	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
1002	11	M40	W18X35	.077	11.333	.022	0	y	46.719	463.5	30.225	231.83	1	H1-1b
1003	11	M41	W18X35	.077	11.333	.022	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
1004	11	M42	W18X35	.077	11.333	.022	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
1005	11	M43	W18X35	.076	11.25	.022	22.5	y	47.414	463.5	30.225	231.83	1	H1-1b
1006	11	M44	W16X31	.017	11.25	.005	22.5	y	38.427	410.4	26.363	185.964	1	H1-1b
1007	11	M45	W16X31	.017	11.333	.005	0	y	37.864	410.4	26.363	185.964	1	H1-1b
1008	11	M46	W16X31	.017	11.333	.005	0	y	37.864	410.4	26.363	185.964	1	H1-1b
1009	11	M47	W16X31	.017	11.333	.005	0	y	37.864	410.4	26.363	185.964	1	H1-1b
1010	11	M48	W16X31	.017	11.333	.005	0	y	37.864	410.4	26.363	185.964	1	H1-1b
1011	11	M49	W16X31	.017	11.333	.005	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
1012	11	M50	W16X31	.017	11.25	.005	22.5	y	38.427	410.4	26.363	185.964	1	H1-1b
1013	11	M51	W18X35	.077	11.333	.022	0	y	46.719	463.5	30.225	231.83	1	H1-1b
1014	11	M52	W18X35	.077	11.333	.022	0	y	46.719	463.5	30.225	231.83	1	H1-1b
1015	11	B1	HSS5X5X4	.074	13.056	.005	0	y	36.808	193.256	28.467	28.467	1.136	H1-1b
1016	11	B2	HSS4X4X4	.073	12.135	.005	24.27	y	20.744	151.406	17.565	17.565	1.136	H1-1b
1017	11	B3	HSS4.5X4.5...	.152	13.621	.006	26.686	y	25.126	172.331	22.689	22.689	1.136	H1-1b
1018	11	B4	HSS4.5X4.5...	.153	13.621	.006	0	y	25.126	172.331	22.689	22.689	1.136	H1-1b
1019	11	B5	HSS4X4X4	.093	12.625	.005	0	y	19.972	151.406	17.565	17.565	1.136	H1-1b
1020	11	B6	HSS4X4X4	.038	8.003	.003	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
1021	11	B7	HSS4X4X4	.029	8.699	.003	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
1022	11	M53	W16X31	.006	0	.003	0	y	184.016	410.4	26.363	202.5	2.766	H1-1b
1023	11	B8	HSS4.5X4.5...	.131	12.784	.006	26.112	y	26.243	172.331	22.689	22.689	1.136	H1-1b
1024	12	C1	HSS6X6X4	.017	0	.000	0	y	158.485	216.297	38.625	38.625	1.72	H1-1b
1025	12	C2	HSS6X6X4	.032	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
1026	12	C3	HSS6X6X4	.085	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
1027	12	C4	HSS6X6X4	.016	0	.000	0	y	158.482	216.297	38.625	38.625	1.667	H1-1b
1028	12	C5	HSS6X6X4	.023	0	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
1029	12	C6	HSS6X6X4	.060	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
1030	12	C7	HSS6X6X4	.060	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
1031	12	C8	HSS6X6X4	.031	0	.000	0	y	158.485	216.297	38.625	38.625	1.666	H1-1b
1032	12	C9	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1033	12	C10	HSS6X6X4	.058	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
1034	12	C11	HSS6X6X4	.060	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
1035	12	C12	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1036	12	C13	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1037	12	C14	HSS6X6X4	.060	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
1038	12	C15	HSS6X6X4	.056	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
1039	12	C16	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1040	12	C17	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1041	12	C18	HSS6X6X4	.060	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
1042	12	C19	HSS6X6X4	.205	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1a
1043	12	C20	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1044	12	C21	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1045	12	C22	HSS6X6X4	.060	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
1046	12	C23	HSS6X6X4	.060	0	.000	0	y	152.217	216.297	38.625	38.625	1	H1-1b
1047	12	C24	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1048	12	C25	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1049	12	C26	HSS6X6X4	.060	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
1050	12	C27	HSS6X6X4	.060	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
1051	12	C28	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1052	12	C29	HSS6X6X4	.017	0	.000	0	z	158.485	216.297	38.625	38.625	1.667	H1-1b
1053	12	C30	HSS6X6X4	.030	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1054	12	C31	HSS6X6X4	.030	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1055	12	C32	HSS6X6X4	.017	0	.000	0	z	158.482	216.297	38.625	38.625	1.667	H1-1b
1056	12	M1	W16X31	.047	10.167	.005	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
1057	12	M2	W16X31	.047	10.167	.005	20.333	y	47.052	410.4	26.363	61.333	1.136	H1-1b
1058	12	M3	W16X31	.047	10.167	.005	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
1059	12	M4	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1060	12	M5	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1061	12	M6	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1062	12	M7	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1063	12	M8	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1064	12	M9	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1065	12	M10	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1066	12	M11	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1067	12	M12	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1068	12	M13	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1069	12	M14	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1070	12	M15	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1071	12	M16	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1072	12	M17	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1073	12	M18	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1074	12	M19	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1075	12	M20	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1076	12	M21	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1077	12	M22	W16X31	.047	10.167	.005	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
1078	12	M23	W16X31	.010	10.167	.004	10.167	y	184.016	410.4	26.363	202.5	2.711	H1-1b
1079	12	M24	W16X31	.047	10.167	.005	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
1080	12	M25	W16X31	.137	11.25	.038	0	y	38.427	410.4	26.363	185.964	1	H1-1b
1081	12	M26	W16X31	.139	11.333	.039	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
1082	12	M27	W16X31	.139	11.333	.039	0	y	37.864	410.4	26.363	185.964	1	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
1083	12	M28	W16X31	.139	11.333	.039	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
1084	12	M29	W16X31	.139	11.333	.039	0	y	37.864	410.4	26.363	185.964	1	H1-1b
1085	12	M30	W16X31	.139	11.333	.039	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
1086	12	M31	W16X31	.137	11.25	.038	0	y	38.427	410.4	26.363	185.964	1	H1-1b
1087	12	M32	W18X35	.207	11.25	.059	0	y	47.414	463.5	30.225	231.83	1	H1-1b
1088	12	M33	W18X35	.210	11.333	.060	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
1089	12	M34	W18X35	.210	11.333	.060	0	y	46.719	463.5	30.225	231.83	1	H1-1b
1090	12	M35	W18X35	.210	11.333	.060	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
1091	12	M36	W18X35	.210	11.333	.060	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
1092	12	M37	W18X35	.207	11.25	.059	0	y	47.414	463.5	30.225	231.83	1	H1-1b
1093	12	M38	W18X35	.207	11.25	.059	0	y	47.414	463.5	30.225	231.83	1	H1-1b
1094	12	M39	W18X35	.210	11.333	.060	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
1095	12	M40	W18X35	.210	11.333	.060	0	y	46.719	463.5	30.225	231.83	1	H1-1b
1096	12	M41	W18X35	.210	11.333	.060	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
1097	12	M42	W18X35	.210	11.333	.060	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
1098	12	M43	W18X35	.207	11.25	.059	0	y	47.414	463.5	30.225	231.83	1	H1-1b
1099	12	M44	W16X31	.137	11.25	.038	0	y	38.427	410.4	26.363	185.964	1	H1-1b
1100	12	M45	W16X31	.139	11.333	.039	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
1101	12	M46	W16X31	.139	11.333	.039	0	y	37.864	410.4	26.363	185.964	1	H1-1b
1102	12	M47	W16X31	.139	11.333	.039	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
1103	12	M48	W16X31	.139	11.333	.039	0	y	37.864	410.4	26.363	185.964	1	H1-1b
1104	12	M49	W16X31	.139	11.333	.039	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
1105	12	M50	W16X31	.137	11.25	.038	0	y	38.427	410.4	26.363	185.964	1	H1-1b
1106	12	M51	W18X35	.210	11.333	.060	0	y	46.719	463.5	30.225	231.83	1	H1-1b
1107	12	M52	W18X35	.210	11.333	.060	0	y	46.719	463.5	30.225	231.83	1	H1-1b
1108	12	B1	HSS5X5X4	.143	12.784	.006	26.112	y	36.808	193.256	28.467	28.467	1.136	H1-1b
1109	12	B2	HSS4X4X4	.265	12.135	.005	24.27	y	20.744	151.406	17.565	17.565	1.136	H1-1a
1110	12	B3	HSS4.5X4.5...	.107	13.621	.006	0	y	25.126	172.331	22.689	22.689	1.136	H1-1b
1111	12	B4	HSS4.5X4.5...	.131	13.621	.006	0	y	25.126	172.331	22.689	22.689	1.136	H1-1b
1112	12	B5	HSS4X4X4	.148	12.367	.005	0	y	19.972	151.406	17.565	17.565	1.136	H1-1b
1113	12	B6	HSS4X4X4	.661	7.829	.003	16.701	y	43.805	151.406	17.565	17.565	1.136	H1-1a
1114	12	B7	HSS4X4X4	.112	8.351	.003	16.701	y	43.805	151.406	17.565	17.565	1.136	H1-1b
1115	12	M53	W16X31	.010	0	.004	0	y	184.016	410.4	26.363	202.5	2.711	H1-1b
1116	12	B8	HSS4.5X4.5...	.104	12.784	.006	0	y	26.243	172.331	22.689	22.689	1.136	H1-1b
1117	13	C1	HSS6X6X4	.017	0	.000	0	y	158.485	216.297	38.625	38.625	1.72	H1-1b
1118	13	C2	HSS6X6X4	.032	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1119	13	C3	HSS6X6X4	.032	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1120	13	C4	HSS6X6X4	.055	0	.000	0	y	158.482	216.297	38.625	38.625	1.667	H1-1b
1121	13	C5	HSS6X6X4	.011	13.25	.000	0	y	158.485	216.297	38.625	38.625	1.667	H1-1b
1122	13	C6	HSS6X6X4	.060	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
1123	13	C7	HSS6X6X4	.060	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
1124	13	C8	HSS6X6X4	.031	0	.000	0	y	158.485	216.297	38.625	38.625	1.666	H1-1b
1125	13	C9	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1126	13	C10	HSS6X6X4	.094	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
1127	13	C11	HSS6X6X4	.060	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
1128	13	C12	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1129	13	C13	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1130	13	C14	HSS6X6X4	.060	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
1131	13	C15	HSS6X6X4	.094	0	.000	0	y	152.217	216.297	38.625	38.625	1.667	H1-1b
1132	13	C16	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1133	13	C17	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1134	13	C18	HSS6X6X4	.060	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
1135	13	C19	HSS6X6X4	.057	0	.000	0	z	152.217	216.297	38.625	38.625	1.667	H1-1b
1136	13	C20	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1137	13	C21	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1138	13	C22	HSS6X6X4	.060	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
1139	13	C23	HSS6X6X4	.060	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
1140	13	C24	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1141	13	C25	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1142	13	C26	HSS6X6X4	.060	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
1143	13	C27	HSS6X6X4	.060	0	.000	0	z	152.217	216.297	38.625	38.625	1	H1-1b
1144	13	C28	HSS6X6X4	.031	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1145	13	C29	HSS6X6X4	.017	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1146	13	C30	HSS6X6X4	.030	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1147	13	C31	HSS6X6X4	.030	0	.000	0	z	158.485	216.297	38.625	38.625	1	H1-1b
1148	13	C32	HSS6X6X4	.017	0	.000	0	z	158.482	216.297	38.625	38.625	1	H1-1b
1149	13	M1	W16X31	.047	10.167	.005	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
1150	13	M2	W16X31	.047	10.167	.005	20.333	y	47.052	410.4	26.363	61.333	1.136	H1-1b
1151	13	M3	W16X31	.047	10.167	.005	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
1152	13	M4	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1153	13	M5	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1154	13	M6	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1155	13	M7	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1156	13	M8	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1157	13	M9	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1158	13	M10	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1159	13	M11	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1160	13	M12	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1161	13	M13	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1162	13	M14	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1163	13	M15	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1164	13	M16	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1165	13	M17	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1166	13	M18	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1167	13	M19	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1168	13	M20	W12X16	.119	10.167	.004	20.333	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1169	13	M21	W12X16	.119	10.167	.004	0	y	10.701	211.95	8.475	12.481	1.136	H1-1b
1170	13	M22	W16X31	.047	10.167	.005	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
1171	13	M23	W16X31	.010	10.167	.004	10.167	y	184.016	410.4	26.363	202.5	2.712	H1-1b
1172	13	M24	W16X31	.047	10.167	.005	0	y	47.052	410.4	26.363	61.333	1.136	H1-1b
1173	13	M25	W16X31	.137	11.25	.038	0	y	38.427	410.4	26.363	185.964	1	H1-1b
1174	13	M26	W16X31	.139	11.333	.039	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
1175	13	M27	W16X31	.139	11.333	.039	0	y	37.864	410.4	26.363	185.964	1	H1-1b
1176	13	M28	W16X31	.139	11.333	.039	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
1177	13	M29	W16X31	.139	11.333	.039	0	y	37.864	410.4	26.363	185.964	1	H1-1b
1178	13	M30	W16X31	.139	11.333	.039	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
1179	13	M31	W16X31	.137	11.25	.038	0	y	38.427	410.4	26.363	185.964	1	H1-1b
1180	13	M32	W18X35	.207	11.25	.059	0	y	47.414	463.5	30.225	231.83	1	H1-1b
1181	13	M33	W18X35	.210	11.333	.060	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
1182	13	M34	W18X35	.210	11.333	.060	0	y	46.719	463.5	30.225	231.83	1	H1-1b
1183	13	M35	W18X35	.210	11.333	.060	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
1184	13	M36	W18X35	.210	11.333	.060	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
1185	13	M37	W18X35	.207	11.25	.059	0	y	47.414	463.5	30.225	231.83	1	H1-1b
1186	13	M38	W18X35	.207	11.25	.059	0	y	47.414	463.5	30.225	231.83	1	H1-1b
1187	13	M39	W18X35	.210	11.333	.060	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
1188	13	M40	W18X35	.210	11.333	.060	0	y	46.719	463.5	30.225	231.83	1	H1-1b
1189	13	M41	W18X35	.210	11.333	.060	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
1190	13	M42	W18X35	.210	11.333	.060	22.667	y	46.719	463.5	30.225	231.83	1	H1-1b
1191	13	M43	W18X35	.207	11.25	.059	0	y	47.414	463.5	30.225	231.83	1	H1-1b
1192	13	M44	W16X31	.137	11.25	.038	0	y	38.427	410.4	26.363	185.964	1	H1-1b
1193	13	M45	W16X31	.139	11.333	.039	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
1194	13	M46	W16X31	.139	11.333	.039	0	y	37.864	410.4	26.363	185.964	1	H1-1b
1195	13	M47	W16X31	.139	11.333	.039	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
1196	13	M48	W16X31	.139	11.333	.039	0	y	37.864	410.4	26.363	185.964	1	H1-1b

Member AISC 13th(360-05): LRFD Steel Code Checks (By Combination) (Continued)

	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	phi*Pnc[k]	phi*Pnt[k]	phi*Mnyy..	phi*Mnzz...	Cb	Eqn
1197	13	M49	W16X31	.139	11.333	.039	22.667	y	37.864	410.4	26.363	185.964	1	H1-1b
1198	13	M50	W16X31	.137	11.25	.038	0	y	38.427	410.4	26.363	185.964	1	H1-1b
1199	13	M51	W18X35	.210	11.333	.060	0	y	46.719	463.5	30.225	231.83	1	H1-1b
1200	13	M52	W18X35	.210	11.333	.060	0	y	46.719	463.5	30.225	231.83	1	H1-1b
1201	13	B1	HSS5X5X4	.830	12.512	.005	0	y	36.808	193.256	28.467	28.467	1.136	H1-1a
1202	13	B2	HSS4X4X4	.078	12.388	.005	24.27	y	20.744	151.406	17.565	17.565	1.136	H1-1b
1203	13	B3	HSS4.5X4.5...	.134	13.343	.006	0	y	25.126	172.331	22.689	22.689	1.136	H1-1b
1204	13	B4	HSS4.5X4.5...	.134	13.343	.006	0	y	25.126	172.331	22.689	22.689	1.136	H1-1b
1205	13	B5	HSS4X4X4	.125	12.625	.005	24.734	y	19.972	151.406	17.565	17.565	1.136	H1-1b
1206	13	B6	HSS4X4X4	.052	8.003	.003	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
1207	13	B7	HSS4X4X4	.027	8.351	.003	0	y	43.805	151.406	17.565	17.565	1.136	H1-1b
1208	13	M53	W16X31	.010	0	.004	0	y	184.016	410.4	26.363	202.5	2.712	H1-1b
1209	13	B8	HSS4.5X4.5...	.142	13.056	.006	0	y	26.243	172.331	22.689	22.689	1.136	H1-1b

Base Load Reactions

CIC – Detachment 10-15; Ft. Drum, New York

Joint Reactions (By Combination) (Continued)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
456	14	N37	7.998	0	38.521	0	0	NC
457	14	N39	0	.495	44.085	0	0	NC
458	14	N41	0	0	44.73	0	0	NC
459	14	N43	0	0	34.279	0	0	NC
460	14	N45	0	0	41.8	0	0	NC
461	14	N47	0	0	47.134	0	0	NC
462	14	N49	0	0	47.134	0	0	NC
463	14	N51	.865	0	45.959	0	0	NC
464	14	N53	0	0	46.295	0	0	NC
465	14	N55	0	0	44.974	0	0	NC
466	14	N57	0	0	47.304	0	0	NC
467	14	N59	0	0	46.295	0	0	NC
468	14	N61	0	0	46.295	0	0	NC
469	14	N63	-4.31	0	50.33	0	0	NC
470	14	N65	0	0	44.823	0	0	NC
471	14	N67	0	0	46.295	0	0	NC
472	14	N69	0	0	46.295	0	0	NC
473	14	N71	0	-4.4	50.635	0	0	NC
474	14	N73	-4.554	0	47.717	0	0	NC
475	14	N75	0	0	46.295	0	0	NC
476	14	N77	0	0	46.295	0	0	NC
477	14	N79	0	0	47.304	0	0	NC
478	14	N81	0	0	47.304	0	0	NC
479	14	N83	0	0	46.295	0	0	NC
480	14	N85	0	0	46.128	0	0	NC
481	14	N87	0	0	47.134	0	0	NC
482	14	N89	0	0	47.134	0	0	NC
483	14	N91	0	0	46.128	0	0	NC
484	14	N93	0	0	33.429	0	0	NC
485	14	N95	0	1.215	41.967	0	0	NC
486	14	N97	0	2.69	47.056	0	0	NC
487	14	N99	0	0	33.429	0	0	NC
488	14	N1000	NC	NC	LOCKED	NC	NC	NC
489	14	Totals:	0	0	1436.799			
490	14	COG (ft):	X: 79.103	Y: 30.502	Z: 8.6			
491	15	N37	3.001	0	28.85	0	0	NC
492	15	N39	0	-5.14	34.313	0	0	NC
493	15	N41	0	0	27.614	0	0	NC
494	15	N43	0	0	27.493	0	0	NC
495	15	N45	0	0	31.238	0	0	NC
496	15	N47	0	0	20.147	0	0	NC
497	15	N49	0	0	20.147	0	0	NC
498	15	N51	.766	0	32.513	0	0	NC
499	15	N53	0	0	32.741	0	0	NC
500	15	N55	0	0	19.334	0	0	NC
501	15	N57	0	0	20.217	0	0	NC
502	15	N59	0	0	32.741	0	0	NC
503	15	N61	0	0	32.741	0	0	NC
504	15	N63	-1.981	0	21.796	0	0	NC
505	15	N65	0	0	19.456	0	0	NC
506	15	N67	0	0	32.741	0	0	NC
507	15	N69	0	0	32.741	0	0	NC
508	15	N71	0	-5.608	24.385	0	0	NC
509	15	N73	-1.785	0	18.073	0	0	NC
510	15	N75	0	0	32.741	0	0	NC
511	15	N77	0	0	32.741	0	0	NC
512	15	N79	0	0	20.217	0	0	NC

Joint Reactions (By Combination) (Continued)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
513	15	N81	0	0	20.217	0	0	NC
514	15	N83	0	0	32.741	0	0	NC
515	15	N85	0	0	32.623	0	0	NC
516	15	N87	0	0	20.147	0	0	NC
517	15	N89	0	0	20.147	0	0	NC
518	15	N91	0	0	32.623	0	0	NC
519	15	N93	0	0	26.702	0	0	NC
520	15	N95	0	-2.314	33.35	0	0	NC
521	15	N97	0	-1.188	28.786	0	0	NC
522	15	N99	0	0	26.702	0	0	NC
523	15	N1000	NC	NC	LOCKED	NC	NC	NC
524	15	Totals:	0	-14.25	869.015			
525	15	COG (ft):	X: 79.062	Y: 30.503	Z: 5.997			
526	16	N37	1.671	0	28.067	0	0	NC
527	16	N39	0	.19	30.839	0	0	NC
528	16	N41	0	0	31.087	0	0	NC
529	16	N43	0	0	26.202	0	0	NC
530	16	N45	0	0	32.021	0	0	NC
531	16	N47	0	0	20.147	0	0	NC
532	16	N49	0	0	20.147	0	0	NC
533	16	N51	-1.426	0	33.803	0	0	NC
534	16	N53	0	0	32.741	0	0	NC
535	16	N55	0	0	18.44	0	0	NC
536	16	N57	0	0	20.217	0	0	NC
537	16	N59	0	0	32.741	0	0	NC
538	16	N61	0	0	32.741	0	0	NC
539	16	N63	-3.42	0	22.69	0	0	NC
540	16	N65	0	0	18.369	0	0	NC
541	16	N67	0	0	32.741	0	0	NC
542	16	N69	0	0	32.741	0	0	NC
543	16	N71	0	-1.853	21.784	0	0	NC
544	16	N73	-3.535	0	21.761	0	0	NC
545	16	N75	0	0	32.741	0	0	NC
546	16	N77	0	0	32.741	0	0	NC
547	16	N79	0	0	20.217	0	0	NC
548	16	N81	0	0	20.217	0	0	NC
549	16	N83	0	0	32.741	0	0	NC
550	16	N85	0	0	32.623	0	0	NC
551	16	N87	0	0	20.147	0	0	NC
552	16	N89	0	0	20.147	0	0	NC
553	16	N91	0	0	32.623	0	0	NC
554	16	N93	0	0	26.702	0	0	NC
555	16	N95	0	.269	29.984	0	0	NC
556	16	N97	0	1.394	32.152	0	0	NC
557	16	N99	0	0	26.702	0	0	NC
558	16	N1000	NC	NC	LOCKED	NC	NC	NC
559	16	Totals:	-6.71	0	869.015			
560	16	COG (ft):	X: 79.062	Y: 30.503	Z: 5.997			
561	17	N37	4.615	0	29.801	0	0	NC
562	17	N39	0	17.791	19.37	0	0	NC
563	17	N41	0	0	42.557	0	0	NC
564	17	N43	0	0	26.588	0	0	NC
565	17	N45	0	0	30.287	0	0	NC
566	17	N47	0	0	20.147	0	0	NC
567	17	N49	0	0	20.147	0	0	NC
568	17	N51	-.771	0	33.418	0	0	NC
569	17	N53	0	0	32.741	0	0	NC

Joint Reactions (By Combination) (Continued)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
570	17	N55	0	0	19.601	0	0	NC
571	17	N57	0	0	20.217	0	0	NC
572	17	N59	0	0	32.741	0	0	NC
573	17	N61	0	0	32.741	0	0	NC
574	17	N63	-1.551	0	21.529	0	0	NC
575	17	N65	0	0	19.14	0	0	NC
576	17	N67	0	0	32.741	0	0	NC
577	17	N69	0	0	32.741	0	0	NC
578	17	N71	0	12.112	12.111	0	0	NC
579	17	N73	-2.293	0	30.662	0	0	NC
580	17	N75	0	0	32.741	0	0	NC
581	17	N77	0	0	32.741	0	0	NC
582	17	N79	0	0	20.217	0	0	NC
583	17	N81	0	0	20.217	0	0	NC
584	17	N83	0	0	32.741	0	0	NC
585	17	N85	0	0	32.623	0	0	NC
586	17	N87	0	0	20.147	0	0	NC
587	17	N89	0	0	20.147	0	0	NC
588	17	N91	0	0	32.623	0	0	NC
589	17	N93	0	0	26.702	0	0	NC
590	17	N95	0	11.289	15.623	0	0	NC
591	17	N97	0	12.414	46.513	0	0	NC
592	17	N99	0	0	26.702	0	0	NC
593	17	N1000	NC	NC	LOCKED	NC	NC	NC
594	17	Totals:	0	53.606	869.015			
595	17	COG (ft):	X: 79.062	Y: 30.503	Z: 5.997			
596	18	N37	18.339	0	37.883	0	0	NC
597	18	N39	0	-.079	31.015	0	0	NC
598	18	N41	0	0	30.912	0	0	NC
599	18	N43	0	0	35.161	0	0	NC
600	18	N45	0	0	22.205	0	0	NC
601	18	N47	0	0	20.147	0	0	NC
602	18	N49	0	0	20.147	0	0	NC
603	18	N51	13.786	0	24.845	0	0	NC
604	18	N53	0	0	32.741	0	0	NC
605	18	N55	0	0	27.255	0	0	NC
606	18	N57	0	0	20.217	0	0	NC
607	18	N59	0	0	32.741	0	0	NC
608	18	N61	0	0	32.741	0	0	NC
609	18	N63	10.767	0	13.875	0	0	NC
610	18	N65	0	0	27.221	0	0	NC
611	18	N67	0	0	32.741	0	0	NC
612	18	N69	0	0	32.741	0	0	NC
613	18	N71	0	-1.871	21.796	0	0	NC
614	18	N73	10.712	0	12.897	0	0	NC
615	18	N75	0	0	32.741	0	0	NC
616	18	N77	0	0	32.741	0	0	NC
617	18	N79	0	0	20.217	0	0	NC
618	18	N81	0	0	20.217	0	0	NC
619	18	N83	0	0	32.741	0	0	NC
620	18	N85	0	0	32.623	0	0	NC
621	18	N87	0	0	20.147	0	0	NC
622	18	N89	0	0	20.147	0	0	NC
623	18	N91	0	0	32.623	0	0	NC
624	18	N93	0	0	26.702	0	0	NC
625	18	N95	0	.412	29.797	0	0	NC
626	18	N97	0	1.538	32.339	0	0	NC

Joint Reactions (By Combination) (Continued)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
627	18	N99	0	0	26.702	0	0	NC
628	18	N1000	NC	NC	LOCKED	NC	NC	NC
629	18	Totals:	53.605	0	869.015			
630	18	COG (ft):	X: 79.062	Y: 30.503	Z: 5.997			
631	19	N37	7.698	0	36.662	0	0	NC
632	19	N39	0	13.635	32.162	0	0	NC
633	19	N41	0	0	49.931	0	0	NC
634	19	N43	0	0	32.051	0	0	NC
635	19	N45	0	0	38.6	0	0	NC
636	19	N47	0	0	40.388	0	0	NC
637	19	N49	0	0	40.388	0	0	NC
638	19	N51	-.063	0	43.129	0	0	NC
639	19	N53	0	0	42.907	0	0	NC
640	19	N55	0	0	38.721	0	0	NC
641	19	N57	0	0	40.532	0	0	NC
642	19	N59	0	0	42.907	0	0	NC
643	19	N61	0	0	42.907	0	0	NC
644	19	N63	-3.475	0	43.039	0	0	NC
645	19	N65	0	0	38.296	0	0	NC
646	19	N67	0	0	42.907	0	0	NC
647	19	N69	0	0	42.907	0	0	NC
648	19	N71	0	6.712	36.167	0	0	NC
649	19	N73	-4.16	0	48.397	0	0	NC
650	19	N75	0	0	42.907	0	0	NC
651	19	N77	0	0	42.907	0	0	NC
652	19	N79	0	0	40.532	0	0	NC
653	19	N81	0	0	40.532	0	0	NC
654	19	N83	0	0	42.907	0	0	NC
655	19	N85	0	0	42.752	0	0	NC
656	19	N87	0	0	40.388	0	0	NC
657	19	N89	0	0	40.388	0	0	NC
658	19	N91	0	0	42.752	0	0	NC
659	19	N93	0	0	31.747	0	0	NC
660	19	N95	0	9.235	28.211	0	0	NC
661	19	N97	0	10.623	54.091	0	0	NC
662	19	N99	0	0	31.747	0	0	NC
663	19	N1000	NC	NC	LOCKED	NC	NC	NC
664	19	Totals:	0	40.205	1294.853			
665	19	COG (ft):	X: 79.096	Y: 30.502	Z: 8.163			
666	20	N37	17.991	0	42.723	0	0	NC
667	20	N39	0	.232	40.895	0	0	NC
668	20	N41	0	0	41.197	0	0	NC
669	20	N43	0	0	38.48	0	0	NC
670	20	N45	0	0	32.539	0	0	NC
671	20	N47	0	0	40.388	0	0	NC
672	20	N49	0	0	40.388	0	0	NC
673	20	N51	10.856	0	36.699	0	0	NC
674	20	N53	0	0	42.907	0	0	NC
675	20	N55	0	0	44.461	0	0	NC
676	20	N57	0	0	40.532	0	0	NC
677	20	N59	0	0	42.907	0	0	NC
678	20	N61	0	0	42.907	0	0	NC
679	20	N63	5.764	0	37.299	0	0	NC
680	20	N65	0	0	44.356	0	0	NC
681	20	N67	0	0	42.907	0	0	NC
682	20	N69	0	0	42.907	0	0	NC
683	20	N71	0	-3.775	43.43	0	0	NC

Joint Reactions (By Combination) (Continued)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
684	20	N73	5.594	0	35.073	0	0	NC
685	20	N75	0	0	42.907	0	0	NC
686	20	N77	0	0	42.907	0	0	NC
687	20	N79	0	0	40.532	0	0	NC
688	20	N81	0	0	40.532	0	0	NC
689	20	N83	0	0	42.907	0	0	NC
690	20	N85	0	0	42.752	0	0	NC
691	20	N87	0	0	40.388	0	0	NC
692	20	N89	0	0	40.388	0	0	NC
693	20	N91	0	0	42.752	0	0	NC
694	20	N93	0	0	31.747	0	0	NC
695	20	N95	0	1.078	38.842	0	0	NC
696	20	N97	0	2.465	43.46	0	0	NC
697	20	N99	0	0	31.747	0	0	NC
698	20	N1000	NC	NC	LOCKED	NC	NC	NC
699	20	Totals:	40.204	0	1294.853			
700	20	COG (ft):	X: 79.096	Y: 30.502	Z: 8.163			
701	21	N37	6.487	0	35.949	0	0	NC
702	21	N39	0	-3.564	43.369	0	0	NC
703	21	N41	0	0	38.724	0	0	NC
704	21	N43	0	0	32.729	0	0	NC
705	21	N45	0	0	39.313	0	0	NC
706	21	N47	0	0	40.388	0	0	NC
707	21	N49	0	0	40.388	0	0	NC
708	21	N51	1.09	0	42.45	0	0	NC
709	21	N53	0	0	42.907	0	0	NC
710	21	N55	0	0	38.52	0	0	NC
711	21	N57	0	0	40.532	0	0	NC
712	21	N59	0	0	42.907	0	0	NC
713	21	N61	0	0	42.907	0	0	NC
714	21	N63	-3.798	0	43.24	0	0	NC
715	21	N65	0	0	38.532	0	0	NC
716	21	N67	0	0	42.907	0	0	NC
717	21	N69	0	0	42.907	0	0	NC
718	21	N71	0	-6.578	45.372	0	0	NC
719	21	N73	-3.779	0	38.955	0	0	NC
720	21	N75	0	0	42.907	0	0	NC
721	21	N77	0	0	42.907	0	0	NC
722	21	N79	0	0	40.532	0	0	NC
723	21	N81	0	0	40.532	0	0	NC
724	21	N83	0	0	42.907	0	0	NC
725	21	N85	0	0	42.752	0	0	NC
726	21	N87	0	0	40.388	0	0	NC
727	21	N89	0	0	40.388	0	0	NC
728	21	N91	0	0	42.752	0	0	NC
729	21	N93	0	0	31.747	0	0	NC
730	21	N95	0	-.966	41.506	0	0	NC
731	21	N97	0	.421	40.795	0	0	NC
732	21	N99	0	0	31.747	0	0	NC
733	21	N1000	NC	NC	LOCKED	NC	NC	NC
734	21	Totals:	0	-10.688	1294.853			
735	21	COG (ft):	X: 79.096	Y: 30.502	Z: 8.163			
736	22	N37	5.489	0	35.361	0	0	NC
737	22	N39	0	.434	40.764	0	0	NC
738	22	N41	0	0	41.329	0	0	NC
739	22	N43	0	0	31.762	0	0	NC
740	22	N45	0	0	39.901	0	0	NC

Joint Reactions (By Combination) (Continued)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
741	22	N47	0	0	40.388	0	0	NC
742	22	N49	0	0	40.388	0	0	NC
743	22	N51	-.553	0	43.418	0	0	NC
744	22	N53	0	0	42.907	0	0	NC
745	22	N55	0	0	37.85	0	0	NC
746	22	N57	0	0	40.532	0	0	NC
747	22	N59	0	0	42.907	0	0	NC
748	22	N61	0	0	42.907	0	0	NC
749	22	N63	-4.877	0	43.91	0	0	NC
750	22	N65	0	0	37.717	0	0	NC
751	22	N67	0	0	42.907	0	0	NC
752	22	N69	0	0	42.907	0	0	NC
753	22	N71	0	-3.762	43.421	0	0	NC
754	22	N73	-5.091	0	41.721	0	0	NC
755	22	N75	0	0	42.907	0	0	NC
756	22	N77	0	0	42.907	0	0	NC
757	22	N79	0	0	40.532	0	0	NC
758	22	N81	0	0	40.532	0	0	NC
759	22	N83	0	0	42.907	0	0	NC
760	22	N85	0	0	42.752	0	0	NC
761	22	N87	0	0	40.388	0	0	NC
762	22	N89	0	0	40.388	0	0	NC
763	22	N91	0	0	42.752	0	0	NC
764	22	N93	0	0	31.747	0	0	NC
765	22	N95	0	.971	38.982	0	0	NC
766	22	N97	0	2.358	43.32	0	0	NC
767	22	N99	0	0	31.747	0	0	NC
768	22	N1000	NC	NC	LOCKED	NC	NC	NC
769	22	Totals:	-5.033	0	1294.853			
770	22	COG (ft):	X: 79.096	Y: 30.502	Z: 8.163			
771	23	N37	.271	0	11.02	0	0	NC
772	23	N39	0	-5.228	18.61	0	0	NC
773	23	N41	0	0	11.796	0	0	NC
774	23	N43	0	0	14.127	0	0	NC
775	23	N45	0	0	14.675	0	0	NC
776	23	N47	0	0	5.313	0	0	NC
777	23	N49	0	0	5.313	0	0	NC
778	23	N51	.639	0	14.433	0	0	NC
779	23	N53	0	0	14.658	0	0	NC
780	23	N55	0	0	5.176	0	0	NC
781	23	N57	0	0	5.33	0	0	NC
782	23	N59	0	0	14.658	0	0	NC
783	23	N61	0	0	14.658	0	0	NC
784	23	N63	-.585	0	5.903	0	0	NC
785	23	N65	0	0	5.337	0	0	NC
786	23	N67	0	0	14.658	0	0	NC
787	23	N69	0	0	14.658	0	0	NC
788	23	N71	0	-4.223	8.425	0	0	NC
789	23	N73	-.325	0	2.986	0	0	NC
790	23	N75	0	0	14.658	0	0	NC
791	23	N77	0	0	14.658	0	0	NC
792	23	N79	0	0	5.33	0	0	NC
793	23	N81	0	0	5.33	0	0	NC
794	23	N83	0	0	14.658	0	0	NC
795	23	N85	0	0	14.606	0	0	NC
796	23	N87	0	0	5.313	0	0	NC
797	23	N89	0	0	5.313	0	0	NC

Joint Reactions (By Combination) (Continued)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
798	23	N91	0	0	14.606	0	0	NC
799	23	N93	0	0	13.546	0	0	NC
800	23	N95	0	-2.693	18.393	0	0	NC
801	23	N97	0	-2.106	12.139	0	0	NC
802	23	N99	0	0	13.546	0	0	NC
803	23	N1000	NC	NC	LOCKED	NC	NC	NC
804	23	Totals:	0	-14.25	353.828			
805	23	COG (ft):	X: 79.665	Y: 30.253	Z: 2.932			
806	24	N37	1.319	0	11.637	0	0	NC
807	24	N39	0	5.373	11.702	0	0	NC
808	24	N41	0	0	18.704	0	0	NC
809	24	N43	0	0	13.539	0	0	NC
810	24	N45	0	0	14.058	0	0	NC
811	24	N47	0	0	5.313	0	0	NC
812	24	N49	0	0	5.313	0	0	NC
813	24	N51	-.359	0	15.021	0	0	NC
814	24	N53	0	0	14.658	0	0	NC
815	24	N55	0	0	5.349	0	0	NC
816	24	N57	0	0	5.33	0	0	NC
817	24	N59	0	0	14.658	0	0	NC
818	24	N61	0	0	14.658	0	0	NC
819	24	N63	-.306	0	5.729	0	0	NC
820	24	N65	0	0	5.132	0	0	NC
821	24	N67	0	0	14.658	0	0	NC
822	24	N69	0	0	14.658	0	0	NC
823	24	N71	0	3.282	3.227	0	0	NC
824	24	N73	-.655	0	8.389	0	0	NC
825	24	N75	0	0	14.658	0	0	NC
826	24	N77	0	0	14.658	0	0	NC
827	24	N79	0	0	5.33	0	0	NC
828	24	N81	0	0	5.33	0	0	NC
829	24	N83	0	0	14.658	0	0	NC
830	24	N85	0	0	14.606	0	0	NC
831	24	N87	0	0	5.313	0	0	NC
832	24	N89	0	0	5.313	0	0	NC
833	24	N91	0	0	14.606	0	0	NC
834	24	N93	0	0	13.546	0	0	NC
835	24	N95	0	2.504	11.62	0	0	NC
836	24	N97	0	3.091	18.912	0	0	NC
837	24	N99	0	0	13.546	0	0	NC
838	24	N1000	NC	NC	LOCKED	NC	NC	NC
839	24	Totals:	0	14.25	353.828			
840	24	COG (ft):	X: 79.665	Y: 30.253	Z: 2.932			
841	25	N37	-1.059	0	10.236	0	0	NC
842	25	N39	0	.103	15.136	0	0	NC
843	25	N41	0	0	15.27	0	0	NC
844	25	N43	0	0	12.836	0	0	NC
845	25	N45	0	0	15.458	0	0	NC
846	25	N47	0	0	5.313	0	0	NC
847	25	N49	0	0	5.313	0	0	NC
848	25	N51	-1.552	0	15.724	0	0	NC
849	25	N53	0	0	14.658	0	0	NC
850	25	N55	0	0	4.282	0	0	NC
851	25	N57	0	0	5.33	0	0	NC
852	25	N59	0	0	14.658	0	0	NC
853	25	N61	0	0	14.658	0	0	NC
854	25	N63	-2.024	0	6.796	0	0	NC

Joint Reactions (By Combination) (Continued)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
855	25	N65	0	0	4.25	0	0	NC
856	25	N67	0	0	14.658	0	0	NC
857	25	N69	0	0	14.658	0	0	NC
858	25	N71	0	-.469	5.825	0	0	NC
859	25	N73	-2.075	0	6.674	0	0	NC
860	25	N75	0	0	14.658	0	0	NC
861	25	N77	0	0	14.658	0	0	NC
862	25	N79	0	0	5.33	0	0	NC
863	25	N81	0	0	5.33	0	0	NC
864	25	N83	0	0	14.658	0	0	NC
865	25	N85	0	0	14.606	0	0	NC
866	25	N87	0	0	5.313	0	0	NC
867	25	N89	0	0	5.313	0	0	NC
868	25	N91	0	0	14.606	0	0	NC
869	25	N93	0	0	13.546	0	0	NC
870	25	N95	0	-.111	15.027	0	0	NC
871	25	N97	0	.477	15.504	0	0	NC
872	25	N99	0	0	13.546	0	0	NC
873	25	N1000	NC	NC	LOCKED	NC	NC	NC
874	25	Totals:	-6.71	0	353.828			
875	25	COG (ft):	X: 79.665	Y: 30.253	Z: 2.932			
876	26	N37	2.649	0	12.42	0	0	NC
877	26	N39	0	.043	15.175	0	0	NC
878	26	N41	0	0	15.231	0	0	NC
879	26	N43	0	0	14.829	0	0	NC
880	26	N45	0	0	13.274	0	0	NC
881	26	N47	0	0	5.313	0	0	NC
882	26	N49	0	0	5.313	0	0	NC
883	26	N51	1.833	0	13.731	0	0	NC
884	26	N53	0	0	14.658	0	0	NC
885	26	N55	0	0	6.243	0	0	NC
886	26	N57	0	0	5.33	0	0	NC
887	26	N59	0	0	14.658	0	0	NC
888	26	N61	0	0	14.658	0	0	NC
889	26	N63	1.133	0	4.835	0	0	NC
890	26	N65	0	0	6.219	0	0	NC
891	26	N67	0	0	14.658	0	0	NC
892	26	N69	0	0	14.658	0	0	NC
893	26	N71	0	-.473	5.828	0	0	NC
894	26	N73	1.095	0	4.701	0	0	NC
895	26	N75	0	0	14.658	0	0	NC
896	26	N77	0	0	14.658	0	0	NC
897	26	N79	0	0	5.33	0	0	NC
898	26	N81	0	0	5.33	0	0	NC
899	26	N83	0	0	14.658	0	0	NC
900	26	N85	0	0	14.606	0	0	NC
901	26	N87	0	0	5.313	0	0	NC
902	26	N89	0	0	5.313	0	0	NC
903	26	N91	0	0	14.606	0	0	NC
904	26	N93	0	0	13.546	0	0	NC
905	26	N95	0	-.079	14.986	0	0	NC
906	26	N97	0	.509	15.546	0	0	NC
907	26	N99	0	0	13.546	0	0	NC
908	26	N1000	NC	NC	LOCKED	NC	NC	NC
909	26	Totals:	6.71	0	353.828			
910	26	COG (ft):	X: 79.665	Y: 30.253	Z: 2.932			
911	27	N37	3.205	0	18.138	0	0	NC

Joint Reactions (By Combination) (Continued)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
912	27	N39	0	17.727	7.027	0	0	NC
913	27	N41	0	0	30.129	0	0	NC
914	27	N43	0	0	15.708	0	0	NC
915	27	N45	0	0	17.915	0	0	NC
916	27	N47	0	0	12.088	0	0	NC
917	27	N49	0	0	12.088	0	0	NC
918	27	N51	-.878	0	20.295	0	0	NC
919	27	N53	0	0	19.644	0	0	NC
920	27	N55	0	0	11.833	0	0	NC
921	27	N57	0	0	12.13	0	0	NC
922	27	N59	0	0	19.644	0	0	NC
923	27	N61	0	0	19.644	0	0	NC
924	27	N63	-.814	0	12.845	0	0	NC
925	27	N65	0	0	11.399	0	0	NC
926	27	N67	0	0	19.644	0	0	NC
927	27	N69	0	0	19.644	0	0	NC
928	27	N71	0	12.854	3.397	0	0	NC
929	27	N73	-1.513	0	22.352	0	0	NC
930	27	N75	0	0	19.644	0	0	NC
931	27	N77	0	0	19.644	0	0	NC
932	27	N79	0	0	12.13	0	0	NC
933	27	N81	0	0	12.13	0	0	NC
934	27	N83	0	0	19.644	0	0	NC
935	27	N85	0	0	19.574	0	0	NC
936	27	N87	0	0	12.088	0	0	NC
937	27	N89	0	0	12.088	0	0	NC
938	27	N91	0	0	19.574	0	0	NC
939	27	N93	0	0	16.021	0	0	NC
940	27	N95	0	11.175	3.637	0	0	NC
941	27	N97	0	11.85	33.644	0	0	NC
942	27	N99	0	0	16.021	0	0	NC
943	27	N1000	NC	NC	LOCKED	NC	NC	NC
944	27	Totals:	0	53.606	521.409			
945	27	COG (ft):	X: 79.062	Y: 30.503	Z: 5.997			
946	28	N37	1.025	0	16.853	0	0	NC
947	28	N39	0	-17.535	30.004	0	0	NC
948	28	N41	0	0	7.152	0	0	NC
949	28	N43	0	0	16.931	0	0	NC
950	28	N45	0	0	19.199	0	0	NC
951	28	N47	0	0	12.088	0	0	NC
952	28	N49	0	0	12.088	0	0	NC
953	28	N51	1.198	0	19.073	0	0	NC
954	28	N53	0	0	19.644	0	0	NC
955	28	N55	0	0	11.472	0	0	NC
956	28	N57	0	0	12.13	0	0	NC
957	28	N59	0	0	19.644	0	0	NC
958	28	N61	0	0	19.644	0	0	NC
959	28	N63	-1.396	0	13.206	0	0	NC
960	28	N65	0	0	11.825	0	0	NC
961	28	N67	0	0	19.644	0	0	NC
962	28	N69	0	0	19.644	0	0	NC
963	28	N71	0	-15.081	22.746	0	0	NC
964	28	N73	-.827	0	2.578	0	0	NC
965	28	N75	0	0	19.644	0	0	NC
966	28	N77	0	0	19.644	0	0	NC
967	28	N79	0	0	12.13	0	0	NC
968	28	N81	0	0	12.13	0	0	NC

Joint Reactions (By Combination) (Continued)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
969	28	N83	0	0	19.644	0	0	NC
970	28	N85	0	0	19.574	0	0	NC
971	28	N87	0	0	12.088	0	0	NC
972	28	N89	0	0	12.088	0	0	NC
973	28	N91	0	0	19.574	0	0	NC
974	28	N93	0	0	16.021	0	0	NC
975	28	N95	0	-10.833	32.319	0	0	NC
976	28	N97	0	-10.158	4.963	0	0	NC
977	28	N99	0	0	16.021	0	0	NC
978	28	N1000	NC	NC	LOCKED	NC	NC	NC
979	28	Totals:	0	-53.606	521.409			
980	28	COG (ft):	X: 79.062	Y: 30.503	Z: 5.997			
981	29	N37	16.929	0	26.219	0	0	NC
982	29	N39	0	-.143	18.671	0	0	NC
983	29	N41	0	0	18.485	0	0	NC
984	29	N43	0	0	24.281	0	0	NC
985	29	N45	0	0	9.833	0	0	NC
986	29	N47	0	0	12.088	0	0	NC
987	29	N49	0	0	12.088	0	0	NC
988	29	N51	13.68	0	11.722	0	0	NC
989	29	N53	0	0	19.644	0	0	NC
990	29	N55	0	0	19.487	0	0	NC
991	29	N57	0	0	12.13	0	0	NC
992	29	N59	0	0	19.644	0	0	NC
993	29	N61	0	0	19.644	0	0	NC
994	29	N63	11.504	0	5.191	0	0	NC
995	29	N65	0	0	19.479	0	0	NC
996	29	N67	0	0	19.644	0	0	NC
997	29	N69	0	0	19.644	0	0	NC
998	29	N71	0	-1.129	13.082	0	0	NC
999	29	N73	11.492	0	4.587	0	0	NC
1000	29	N75	0	0	19.644	0	0	NC
1001	29	N77	0	0	19.644	0	0	NC
1002	29	N79	0	0	12.13	0	0	NC
1003	29	N81	0	0	12.13	0	0	NC
1004	29	N83	0	0	19.644	0	0	NC
1005	29	N85	0	0	19.574	0	0	NC
1006	29	N87	0	0	12.088	0	0	NC
1007	29	N89	0	0	12.088	0	0	NC
1008	29	N91	0	0	19.574	0	0	NC
1009	29	N93	0	0	16.021	0	0	NC
1010	29	N95	0	.298	17.812	0	0	NC
1011	29	N97	0	.974	19.47	0	0	NC
1012	29	N99	0	0	16.021	0	0	NC
1013	29	N1000	NC	NC	LOCKED	NC	NC	NC
1014	29	Totals:	53.605	0	521.409			
1015	29	COG (ft):	X: 79.062	Y: 30.503	Z: 5.997			
1016	30	N37	-12.699	0	8.772	0	0	NC
1017	30	N39	0	.335	18.359	0	0	NC
1018	30	N41	0	0	18.797	0	0	NC
1019	30	N43	0	0	8.358	0	0	NC
1020	30	N45	0	0	27.281	0	0	NC
1021	30	N47	0	0	12.088	0	0	NC
1022	30	N49	0	0	12.088	0	0	NC
1023	30	N51	-13.36	0	27.645	0	0	NC
1024	30	N53	0	0	19.644	0	0	NC
1025	30	N55	0	0	3.818	0	0	NC

Joint Reactions (By Combination) (Continued)

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1026	30	N57	0	0	12.13	0	0	NC
1027	30	N59	0	0	19.644	0	0	NC
1028	30	N61	0	0	19.644	0	0	NC
1029	30	N63	-13.714	0	20.86	0	0	NC
1030	30	N65	0	0	3.745	0	0	NC
1031	30	N67	0	0	19.644	0	0	NC
1032	30	N69	0	0	19.644	0	0	NC
1033	30	N71	0	-1.098	13.061	0	0	NC
1034	30	N73	-13.832	0	20.343	0	0	NC
1035	30	N75	0	0	19.644	0	0	NC
1036	30	N77	0	0	19.644	0	0	NC
1037	30	N79	0	0	12.13	0	0	NC
1038	30	N81	0	0	12.13	0	0	NC
1039	30	N83	0	0	19.644	0	0	NC
1040	30	N85	0	0	19.574	0	0	NC
1041	30	N87	0	0	12.088	0	0	NC
1042	30	N89	0	0	12.088	0	0	NC
1043	30	N91	0	0	19.574	0	0	NC
1044	30	N93	0	0	16.021	0	0	NC
1045	30	N95	0	.044	18.144	0	0	NC
1046	30	N97	0	.719	19.138	0	0	NC
1047	30	N99	0	0	16.021	0	0	NC
1048	30	N1000	NC	NC	LOCKED	NC	NC	NC
1049	30	Totals:	-53.606	0	521.409			
1050	30	COG (ft):	X: 79.062	Y: 30.503	Z: 5.997			

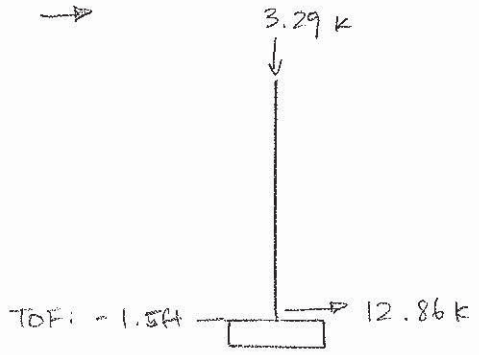
Foundation Design

CIC – Detachment 10-15; Ft. Drum, New York

Footing Node : N71 [Data from RISA 3D]

Load Case 27 : 0.6D + 0.7E

F_z = 3.29 k ↓
F_y = 12.86 k →



Conc weight : 145 pcf
soil weight : 120 pcf

Footing Sliding Check

try 7'x7'x2' Footing
Downward force:

$$3.29\text{ k} + \frac{(145\text{pcf})(7'\times 7'\times 2')}{1000\text{ lb/k}} + \frac{(120\text{pcf})(7'\times 7'\times 1.5')}{1000\text{ lb/k}} = 26.32\text{ k}$$

$\mu = 0.5$
μ(net downward force) > F_y

$\mu(26.32) = 13.16$ k > $F_y = 12.86$ k ok ✓

Subject CIC Det 10-15
Footing Design: interior braced frame column.

* Footing Uplift Check is not needed because the net uplift force is less than the downward force as seen in the RISA 3D output.

Footing Compression Check,
allowable soil bearing = 2 ksf

D + S = 50.451 k [RISA 3D : LC 14]

Soil weigh = $\frac{(120\ pcf)(7 \times 7 \times 1.5)}{1000\ ^{lb}/_{k}} = 8.82$

$\frac{50.451\ k + 8.82\ k}{(7' \times 7')} = 1.21\ ksf$

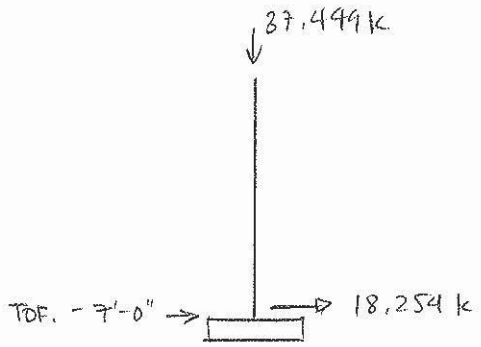
allowable soil bearing = 2 ksf > 1.21 ksf ok ✓

Conclusion: use 7' x 7' x 2' footing for interior braced columns.

Footing Node: N37 [DATA RISA 3D]

Load Case 18: D + 0.7E

Fz = 37.449 k ↓
Fx = 18.254 k →



conc weight : 145 pcf
soil weight : 120 pcf

Footing Sliding Check

try 6' x 6' x 2' Footing

Net downward force:

$$37.449\,k + \frac{(145\,pcf)(6' \times 6' \times 2')}{1000\,lb/k} + \frac{(145\,pcf)(\ldots' \times 2.67' \times 7)}{1000\,lb/k}$$
$$+ \frac{(120\,pcf)(([6 \times 6] - [2' \times 2.67'])(7'))}{1000\,lb/k}$$

$$= 79.06\,k$$

$\mu = 0.5$
μ (net downward force) > Fx
μ (79.06) = 39.5 k > 18.254 k

Subject CIC Det. 10-15
Footing Design: exterior braced column

* Footing Uplift Check is not needed b/c the net uplift force is less than the downward force as seen in RISA 3D output.

Footing Compression Check

allowable soil bearing = 2 ksf

D+S = 38.087 k [RISA 3D: LC 14]
Weight of footing = 10.44 k
Weight of pedestal = 5.42 k
Weight of soil = 25.75 k

$$\frac{(38.087 + 10.44 + 5.42 + 25.75)k}{(6' \times 6')} = 2.21 \text{ ksf} > 2 \text{ ksf} \quad \text{N.G}$$

-try 7' x 7' x 2'

Weight of footing = [145 pcf x 7' x 7' x 2'] / 1000 lb/k = 14.21 k

Weight of pedestal = 145 pcf (2' x 2.67' x 7') = 5.42 k

Weight of soil = (120 pcf)[(7' x 7') − (2 x 2.67)](7') = 36.67 k

$$\frac{38.087\text{k} + 14.21\text{ k} + 5.42\text{ k} + 36.67\text{k}}{7' \times 7'} = 1.92 \text{ ksf} < 2.00 \text{ ksf}$$

conclusion: USE 7'x7'x2' Footing for exterior braced columns.

Footing Node: N79 [DATA FROM ETSA 3D]

Load Case 14: D + S

Fz = 47.122 K
No lateral Forces

Footing Compression Check

Allowable Soil bearing capacity = 2 ksf

D + S = 47.122K [ETSA 3D : LC 14]

try 6' x 6' x 2' Footing

$$\text{Footing Wt} = \frac{(145\ pcf)(6 \times 6 \times 2)}{1000\ ^{lb}/_{k}} = 10.44\ k$$

$$\text{Soil Wt} = \frac{(120\ pcf)(6 \times 6 \times 1.5)}{1000\ ^{lb}/_{k}} = 6.48\ k$$

$$\frac{47.122 + 10.44 + 6.48}{(6' \times 6')} = 1.78\ ksf < 2.0\ ksf \quad ok\checkmark$$

Conclusion: Use 6' x 6' x 2' Footings for non-braced interior columns.

Subject CIC Detachment 10-15
Footing Design: Exterior Gravity

Footing Node: N59 [DATA FROM RISA 3D]

Load Case 14: D+S

F_z = 45.889 k
NO LATERAL FORCES

Footing Compression Check

Allowable Soil Bearing Capacity: 2 ksf

D+S = 45.889 k

Try 7.5' x 7.5' x 2'

Footing wt: (145 pcf)(7.5' x 7.5' x 2')/1000 = 16.31 k

Pedestal wt: (145 pcf)(2' x 2.67' x 7)/1000 = 5.42 k

Soil wt: (120 pcf)([7.5 x 7.5] - [2 x 2.67])(7))/1000 = 42.76 k

$$\frac{(45.889 + 16.31 + 5.42 + 42.76)\text{k}}{(7.5' \times 7.5')} = 1.96 \text{ ksf} < 2.0 \text{ ksf} \quad \text{ok} \checkmark$$

Conclusion: use 7.5' x 7.5' x 2' footings for non-braced exterior columns

APPENDIX D

ELECTRICAL CALCULATIONS

CORRECTED FINAL SUBMISSION
12 SEPTEMBER 2012

Criminal Investigation Command
Field Operations Building
RA 10-15
Adapt-Build
Fort Drum, NY

Parsons Brinckerhoff
465 Spring Park Place
Herndon, VA 20170

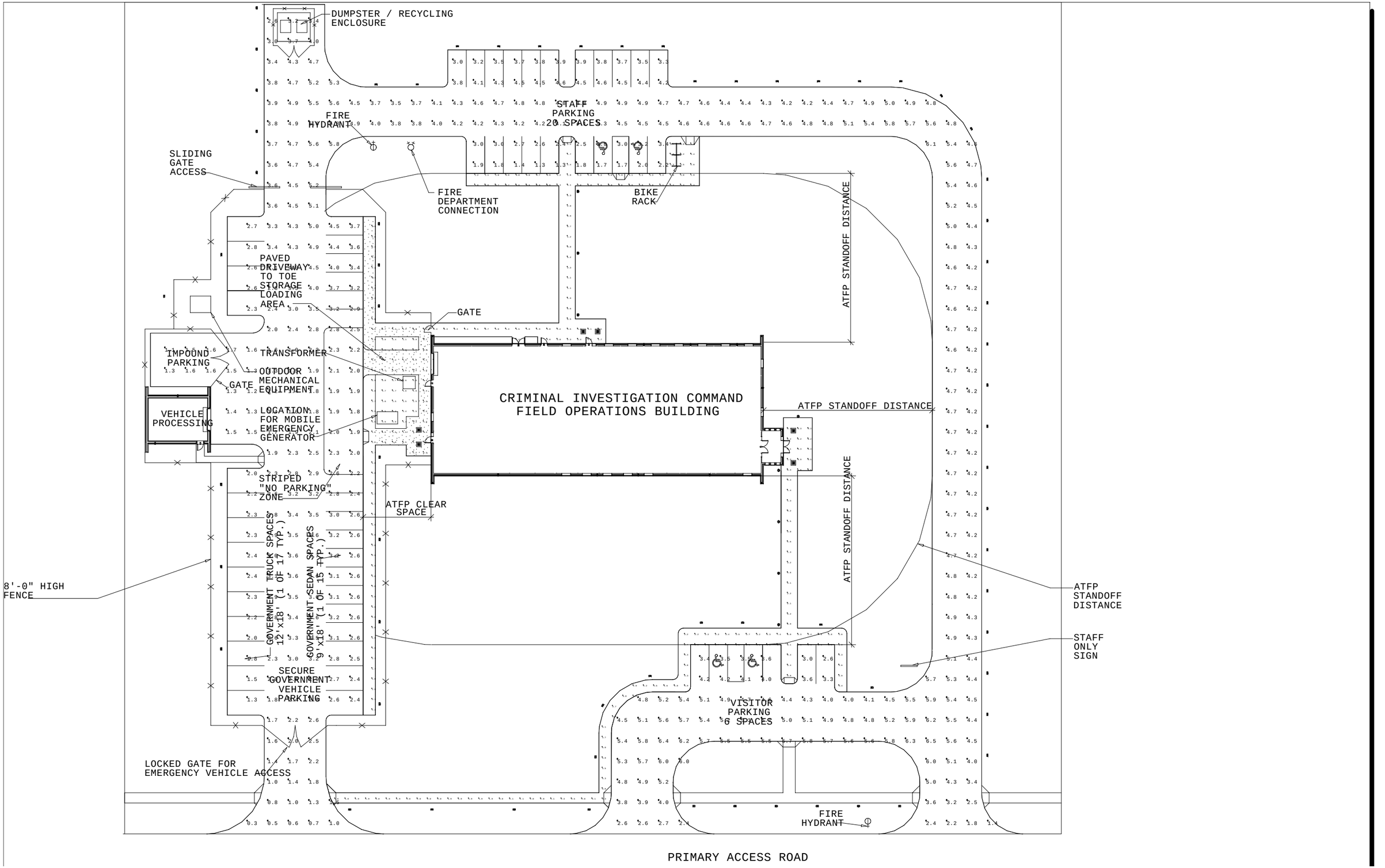
Date:6/21/2012

Calculation Summary						
Label	Units	Avg	Max	Min	Avg/Min	Max/Min
002 - Vestibule West_Floor	Fc	9.18	11.3	6.2	1.48	1.82
003 - Vestibule North_Floor	Fc	16.58	20.3	12.0	1.38	1.69
102 - Corridor_Floor	Fc	24.80	30.6	16.2	1.53	1.89
103 - Men_Floor	Fc	16.05	22.5	6.7	2.40	3.36
104 - Women_Floor	Fc	15.49	22.7	5.6	2.77	4.05
105 - Corridor_Floor	Fc	16.61	28.9	2.4	6.92	12.04
106 - Multi Purpose Lounge_Work	Fc	30.68	46.6	12.0	2.56	3.88
107 - Shower_Floor	Fc	17.28	24.2	9.3	1.86	2.60
108 - Special Agent In Charge_W	Fc	61.10	80.6	33.3	1.83	2.42
109 - Large Interview Room_Work	Fc	51.28	66.2	29.1	1.76	2.27
110 - Criminal Intelligence Roo	Fc	33.90	59.4	13.1	2.59	4.53
111 - Small Interview Room_Work	Fc	40.36	55.3	26.0	1.55	2.13
112 - Small Interview Room_Work	Fc	40.36	55.4	26.1	1.55	2.12
113 - Photo ID Room_Workplane	Fc	41.51	56.4	26.1	1.59	2.16
114 - Corridor_Floor	Fc	24.28	30.4	6.8	3.57	4.47
115 - Polygraph Exam Office_Wor	Fc	32.99	41.6	24.6	1.34	1.69
116 - Polygraph Exam Room_Workp	Fc	32.59	40.9	24.6	1.32	1.66
117 - Observation Room_Workplan	Fc	37.72	55.0	16.8	2.25	3.27
118 - Suspect Waiting Room_Work	Fc	33.74	52.8	12.6	2.68	4.19
119 - Suspect Toilet_Floor	Fc	6.28	7.2	5.4	1.16	1.33
121 - Evidence Custodian Office	Fc	36.25	52.3	20.8	1.74	2.51
122 - Evidence Depository Room_F	Fc	46.83	59.1	30.2	1.55	1.96
123 - Duty Agent Office_Workpla	Fc	37.69	54.3	22.2	1.70	2.45
124 - Evidence Processing_Workp	Fc	34.69	53.9	17.9	1.94	3.01
125 - Toe Storage_Floor	Fc	27.97	38.0	11.1	2.52	3.42
126 - Arms Vault_Floor	Fc	14.69	17.4	12.3	1.19	1.41
127 - Telecom Room_Floor	Fc	20.27	25.4	15.0	1.35	1.69
128 - Mech_Floor	Fc	24.42	30.0	15.4	1.59	1.95
129 - Elec_Floor	Fc	18.73	22.9	13.6	1.38	1.68
130 - Crim Invest Off_Workplane	Fc	39.51	54.7	25.5	1.55	2.15
131 - Corridor_Floor	Fc	24.88	29.1	6.4	3.89	4.55
132 - Invest OPS Tech Off_Workp	Fc	36.97	53.0	21.6	1.71	2.45
133 - Drug Suppression Team Off	Fc	39.52	54.4	25.5	1.55	2.13
134 - Drug Suppression Team Off	Fc	39.50	54.4	25.6	1.54	2.13
135 - Special Agent Office_Work	Fc	39.59	54.7	25.4	1.56	2.15
136 - Special Agent Office_Work	Fc	39.52	54.4	25.6	1.54	2.13
137 - Special Agent Office_Work	Fc	39.95	55.1	25.8	1.55	2.14
138 - Special Agent Office_Work	Fc	36.37	52.4	21.2	1.72	2.47
139 - Corridor_Floor	Fc	23.22	27.9	15.1	1.54	1.85
140 - Recycle Closet_Floor	Fc	11.89	13.2	10.8	1.10	1.22
141 - Admin OPS Rm_Workplane	Fc	38.33	52.9	15.2	2.52	3.48
142 - Janitor_Floor	Fc	10.54	12.5	7.7	1.37	1.62

Criminal Investigation Command
Field Operations Building
RA 10-15
Adapt-Build
Fort Drum, NY

Parsons Brinckerhoff
465 Spring Park Place
Herndon, VA 20170

Date:6/21/2012


DUMPSTER / RECYCLING ENCLOSURE
FIRE HYDRANT
STAFF PARKING 20 SPACES
SLIDING GATE ACCESS
FIRE DEPARTMENT CONNECTION
BIKE RACK
ATFP STANDOFF DISTANCE
PAVED DRIVEWAY TO TOE STORAGE
LOADING AREA
GATE
IMPOUND PARKING
TRANSFORMER
OUTDOOR MECHANICAL EQUIPMENT
GATE
CRIMINAL INVESTIGATION COMMAND
FIELD OPERATIONS BUILDING
ATFP STANDOFF DISTANCE
VEHICLE PROCESSING
LOCATION FOR MOBILE EMERGENCY GENERATOR
STRIPED "NO PARKING" ZONE
ATFP CLEAR SPACE
ATFP STANDOFF DISTANCE
8'-0" HIGH FENCE
GOVERNMENT TRUCK SPACES (1 OF 17 TYP.)
12'x18'
GOVERNMENT SEDAN SPACES (1 OF 15 TYP.)
9'x18'
ATFP STANDOFF DISTANCE
ATFP STANDOFF DISTANCE
STAFF ONLY SIGN
SECURE GOVERNMENT VEHICLE PARKING
VISITOR PARKING 6 SPACES
LOCKED GATE FOR EMERGENCY VEHICLE ACCESS
FIRE HYDRANT
PRIMARY ACCESS ROAD

Calculation Summary						
Label	Units	Avg	Max	Min	Avg/Min	Max/Min
North West Sidewalk_Planar	Fc	1.74	7.8	0.3	5.80	26.00
Roadway_Planar	Fc	3.64	6.5	0.3	12.13	21.67
South East Sidewalk_Planar	Fc	2.79	7.4	0.1	27.90	74.00

APPENDIX E

ENERGY MODELING

CORRECTED FINAL SUBMISSION
12 SEPTEMBER 2012

Energy Modeling Approach and Simulation Parameters

(This process is specifically written to address the Detachment 24 Building, however the process for modeling the other three buildings is essentially the same.)

Comparison

The "Alternative 1" is set up as the Baseline Alternative, which complies with ASHRAE 90.1-2007. "Alternative 2" and "Alternative 3" are set up as Design Alternatives. The form, fabric, and system information between "Alternative 2" and "Alternative 3" is the same. The two Design Alternatives differ in the primary cooling plant – "Alternative 2" uses a cooling tower and "Alternative 3" uses an air-cooled chiller.

Per ASHRAE 90.1-2007 requirements, the following are included in the model:

- Energy parameters are set to calculate 8760 simulation hours.
- Alternative 1 is set as the "Base Alternative" for "Economic comparison."
- Alternative 1 is set as the "Base Alternative" for "Performance rating method" and Alternative 1 is set to "Rotate and average PRM results."

Weather Data

The weather data is taken from the Department of Energy website as a *.bin file, changed to a *.tmy file, and imported into the Trane TRACE 700 weather library.

Weather overrides have been set for the 1% ASHRAE Summer Design Cooling and 99.6% for the Winter Design Heating, per ASHRAE 90.1-2007 energy simulation requirements.

Energy Cost Rates

Annual energy costs are determined using state average unit prices from EIA, which is updated annually on EIA's website (www.eia.doe.gov).

Schedules and Internal Loads

Schedules are set to model hourly variations in occupancy, lighting power, miscellaneous equipment power, and HVAC system operations, and are defined separately for each day of the week and holidays per ASHRAE 90.1-2007 requirement. Modeling the thermostat set points is explained below.

Occupancy

The expected occupancy for the CIDC building is from 0630 to 2000. Due to TRACE's limitations dealing with fractional hours, the hours from 0600 to 0700 are staffed at 50 percent, and the hours from 0700

to 2000 are staffed at 100 percent for Monday to Sunday and 0 percent from midnight to midnight for holidays. Occupancy is defined room-by-room according to the Standard Design Criteria.

Lights

The lighting schedule is set to match the occupancy schedule with the exception that during unoccupied hours, the lighting power is set to 5 percent to account for emergency lighting. In the Baseline Building, the lighting power density is defined at the template level. In the Design Alternatives, the lighting power density is defined at the room level as the lighting power density requirements are satisfied via Space-by-Space Method.

In the design alternatives, the lighting power densities are reduced by 10% for any space that has occupancy sensors, per ASHRAE 189.1 requirements for energy modeling.

Miscellaneous Equipment

This loading is defined with the Occupancy Schedule. Miscellaneous equipment defines receptacle loads, exclusively. Area-based loading is derived from ASHRAE 90.1-1989 and is assumed to be 0.75 W/sf.

Ventilation

Vent schedules match the occupancy schedule as the intent is to close outdoor air dampers during unoccupied mode, and the system shall re-circulate air to maintain temperature drift points.

The Design Alternatives apply ASHRAE 62.1 ventilation requirements on a template and room level. The template defines the typical space-type as “Office space” and any rooms that deviate from this space-type are defined at the room level. The option to “Apply ASHRAE Std 62.1-2004/2007” is selected and the “System Ventilation Flag” is set to “ASHRAE Standard 62.1-2004/2007.” This sets the program to use equations from ASHRAE 62.1 to calculate the system-level ventilation requirement, based on the room ventilation requirements. Per ASHRAE 90.1, demand control ventilation (DCV) is required for the Command Conference Room, Multi-purpose Lounge, Large Interview Room (Room 281), and Suspect Waiting Room. These rooms are served by the Primary and Secondary VAV Systems, therefore, these two systems have their “System Ventilation Flags” set to “ASHRAE 62.1-2004/2007 w/ Vent Reset.” Proportional control is selected allowing the outdoor air controller to adjust the outdoor air intake flow proportionally between the minimum ventilation flow and the design ventilation flow.

Zone distribution effectiveness for cooling is defined as 100 percent based on a ceiling supply and ceiling return and 100 percent for heating assuming the “worst case scenario” for a ceiling supply and ceiling return.

ASHRAE 90.1, G3.1.2.5 requires that ventilation rates for the Baseline and Design Alternatives be the same. In order to ensure this requirement, the Baseline Building ventilation rates are determined by taking the total ventilation requirement for all systems in the design case, totaled, and divided by the building area. This provides for a ventilation rate per area for the Baseline Building. The application of ASHRAE 62.1 Standard is disabled, and the ventilation rates previously calculated are applied for cooling

and heating modes. At the system level, the “System ventilation flag” is defined as “Sum Room OA Reqs.” This sets the program to sum the (user-defined) individual room ventilation requirements to calculate the system-level ventilation requirement.

In both Baseline and Design Alternatives, “people-averaging” is not used – the ventilation rates are based on highest, user-defined occupancy.

Room exhaust rates are calculated based on ASHRAE 62.1 requirements and are the same in the Baseline and Design Alternatives.

Thermostat Set Points

Schedules are not defined for thermostat set points. Cooling and heating dry bulb temperatures, relative humidity, and cooling and heating drift points are defined. TRACE allows the room temperature to drift to the user-defined temperature drift point during the hours in which the Occupancy Schedule reads 5 percent or less; if the Occupancy Schedule reads greater than 5 percent, the thermostat will try to control the room to the design room dry bulb temperature.

Thermostat sensors are located at the zone level per ASHRAE 90.1, Section 6.4.3.1.1.

Building Form

The “Spaces” in Autodesk Revit bring door, window, wall, partition, roof, and floor information into Trane TRACE via gbXML.

The National Renewable Energy Laboratory (NREL) published a report on the typical infiltration rates for large office buildings based on ASHRAE 90.1-1989, the latest version which includes infiltration requirements. Since air barrier requirements are introduced in ASHRAE 90.1-2010 and 189.1-2009, tests were performed on large office buildings to compare results. The infiltration rates are labeled in terms of air changes per hour. The 1989 values are used as the baseline infiltration and the 2010 values are used as the design. The maximum infiltration rates (which occur during non-operating hours), for the baseline and design, are modeled for perimeter zones and for the core zones. A “Utilization Schedule” is created to step down the infiltration rates by a specified percentage during occupancy. The schedule is applied to all spaces, and each space is distinguished by perimeter zone or core zone. This set-up simulates a lower infiltration rate during occupancy, and the design case models a lower all-around infiltration rate based on the envelope requirements from ASHRAE 90.1-2010 and 189.1-2009.*Roofs*

Roof area and orientation is determined by projecting the roof line over a floor plan layout and determining the projected area of the roof over each space and is divided according to orientation. The actual area is determined by developing a multiplication factor from the cosine-based relationship between the projected area and the actual roof area. The angle for this calculation is determined by converting the slope, 4:12, to degrees. The pitch angle is taken from the vertical plane and rotates toward the sky; therefore the 4:12 slope from the 90° vertical plane gives TRACE’s roof pitch.

The TRACE program is limited in accurately modeling a building with an attic space, so a substitute is provided. The heat transfer from the roof to the plenum is modeled as a single construction element – the roof is modeled with roof components and the gypsum board and insulation layers separating the attic and the plenum.

Shading Devices

The shading devices modeled are unique to each building. This device is applied over window opening in the exterior wall.The Battalion HQ shading device is modeled as equivalent to the design intent by considering the Projection Factor for the designed shading device and applying a shading device that provides the same Projection Factor. Per ASHRAE 90.1 requirements, the shading device is applied only to the Design Alternative; manual internal shading devices are not modeled in either the Baseline Building or the Design Alternatives.

Walls

Walls are derived from the “Spaces” created in the Revit model. Adjacencies (or absence of) define interior and exterior walls. Partitions are defined at the template level to have a miniscule U-factor (U=10^-7) to negate the estimation of heat transfer across partitions – this prevents the system coils sizing from being affected by a non-existent load.

Floors

ASHRAE 90.1 provides a minimum F-value (the perimeter heat loss factor for slab-on-grade, expressed in Btu/h·ft·F°) whereas the TRACE input is in the form of a U-value. The conversion is determined by calculating heat loss with the F-value and dividing by area of slab to acquire loss per square foot.

Building Fabric

Per ASHRAE 90.1 requirement, the model is set to calculate heat loss/gain for heat transfer via conduction, internal loads, or solar through the time delay based on actual mass – the program calculates the room specific mass (in lb/sf of floor area).

Custom library construction types are built specifically for this project… The Baseline Building is modeled with envelope values defined by ASHRAE 90.1 for the appropriate Climate Zone. Per ASHRAE 90.1 requirements, the construction types mandated for the Baseline model are as follows: Roofs – Insulation entirely above deck, Above-grade walls – Steel-framed. Slab-on-grade floors shall match the F-factor for unheated slabs from the same tables.

Per ASHRAE 90.1 requirements, all roof surfaces in the Baseline Building are modeled with a reflectivity of 0.30. This translates to TRACE by defining the “Outside shortwave (solar) absorptivity” as 0.7.

Systems

Baseline Building

According to ASHRAE 90.1, the Baseline Building system is a constant volume Packaged Single Zone Air Conditioner with a Fossil fuel furnace. ASHRAE 90.1 requires that for this system, each thermal block is modeled with its own HVAC system. The Baseline Building system in TRACE is the "Single Zone" under the "Constant Volume – Non-mixing" system category. This system has supply fans ("cooling fan") and heating and cooling coils at the zone level and a return fan at the system level.

ASHRAE 90.1 Table G.3.1.2.6A indicates that air-side economizers are required to be modeled in the Baseline Building for the project's climate zone, 3B. Table G.3.1.2.6B states that the high-limit shutoff temperature for the climate zone is 75°F DB. This is addressed in …

On the Energy Parameters dialog box, the "Apply ECB/PRM rules to fan sizing" option is checked and ASHRAE 90.1-2007 is selected from the drop-down menu. This tells TRACE uses the rules stipulated in Section G3.1.2.9 to calculate fan energy rate for energy analysis. This supersedes the fan full load energy rates input on the "Fans" tab under "Create Systems." The fan cycling schedule is set to cycle with all loads, as defined on the "Fans" tab.

Section G3.1.2.8 states that system design supply airflow rates for the Baseline Building shall be based on a supply air/room air temperature difference of 20°F. The thermostat settings for cooling dry bulb and heating dry bulb are 75°F and 70°F, respectively, so in the "Temp/Humidity" tab under "Create Systems," the cooling supply air max and min are set to 55°F and the heating supply air max and min are set to 90°F.

The Baseline Building coil capacities are set to 115% and 125% of the design capacity for the cooling and heating coils, respectively. Should the number of unmet load hours for Design Alternative exceed the Baseline Building by more than 50, simulated capacities in the Baseline Building shall be decreased incrementally and the building re-simulated until the unmet load hours are within 50 of the unmet load hours of the proposed design. If unmet load hours for the Design Alternative or Baseline Building exceed 300, simulated capacities shall be increased incrementally, and the building with unmet loads re-simulated until unmet load hours are reduced to 300 or less.

Design Alternative1

Central systems include the two VAV systems – one which serves the "Administrative Areas" of the building and the other serving the "Special Uses Area" of the building. The system type is variable air volume with baseboard heating about the exterior zones. The Administrative Area system is labeled "Primary – VAV w/ BB" and the Special Uses system is labeled "Secondary – VAV w/ BB." A central fan, optional exhaust/return fan, preheat coil, and cooling coil is defined at the system level. Baseboard heaters and VAV terminals (auxiliary fans) are defined at the zone level. The TRACE program begins the simulation by calculating what effect the operation of the OA-controlled baseboard units will have on the room's drift temperature. This heat output is determined by the outdoor air reset schedule. For these systems, the "Reset per worst case room" is set to "Off" and "Use system default outside air reset" is checked – the system default to a reset schedule defined for the system type. In this system, the default reset schedule assumes that the output of the baseboard units is proportional to the room heating-thermostat-to-outside-air temperature difference. During setback periods, the baseboard

heating output is modulated downward proportionally to the amount of degrees setback from the daytime heating setpoint. The heat output of the OA-controlled baseboard unit adds additional heat gain to the space to offset the conduction heat loss. When the drift temperature rises above the hour's cooling thermostat set point, the VAV box opens and delivers a proportionate quantity of supply air to the space – enough cool supply air to bring down and maintain the space temperature according to the thermostat setpoint. So long as the room drift temperature is below the cooling thermostat setpoint this hour, the VAV box is fully closed. While the drift temperature is within the dead band region, there is no air movement and absolutely no cooling can be provided by the main system VAV box. Should the skin heating system not supply enough heat to satisfy the space heating load, the drift temperature will fall below this hour's heating thermostat setpoint.

These systems have air-side economizers set to monitor outdoor dry-bulb temperature.

Spaces that require heating only, i.e. vestibules, are handled by the "Unit Heaters" system type under the "Heating Only" system category. The system is labeled as "CUHs – Vestibules." The system schematic defines a fan and heating coil at the zone level. Each of the individual vestibules and the mechanical rooms are assigned to their own individual zones, therefore TRACE assigns a fan and heating coil to each room. The vestibules have no ventilation requirements set at the rooms, so the coil does not factor in condition ventilation air.

In order to satisfy the ventilation requirements for the Electrical Room, the "Ventilation and Heating" system type is applied (under the "Heating Only" system category). The system is labeled as "FCU – Elec," and the fan and heating coil are set to the system level, therefore only the Electrical Room is applied to this system. The system supplies a constant volume of heated supply air and the heating coil is cycled to meet varying loads. When heating is not needed, the system attempts to bring the space temperatures down using unconditioned ventilation air. The "Return Air Path" is defined as being a "Plenum" return. This allows TRACE to account for loads from the roof, lights, etc in the return air going to the system. The requirement for satisfying cooling is ventilation air, so the room is set to 10 air changes per hour. TRACE does not recognize this air flow rate as ventilation air.

This same system is set up for the Mechanical Room, since the Mechanical Room will have its own dedicated fans and coils. The requirement for satisfying cooling is ventilation air, so the room is set to 6 air changes per hour. TRACE does not recognize this air flow rate as ventilation air.

The Evidence Depository Room requires separate heating, cooling, and ventilation. This is satisfied with the "Fan Coil" system type under the "Constant Volume – Non-mixing" system category. The system is labeled "FCU – Evid Dep" and consists of a zone level fan and heating/cooling coil. TRACE treats this system as a separate fan coil unit, including a fan, cooling coil, and heating coil, located in each room. The program assumes that the fan coil unit is a four-pipe arrangement with heating and cooling coil available year-round. The unit supplies a constant volume of conditioned air to the room, and the coils are cycled to meet the varying load. When the room drift-temperature rises above the room heating thermostat, the heating coil is de-activated, allowing the space temperature to drift upward. Since the supply air will be at the return/outside air dry bulb temperature, scheduling outside air into the space

will temper this effect to some degree. When the room drift-temperature drops below the room heating thermostat, the heating coil is modulated to produce a supply air dry bulb temperature that will bring the room temperature up to the heating thermostat.

Telecommunications Rooms 1 and 2 have similar system setups. These rooms are modeled with separate systems because Telecomm Room 1 does not utilize a cooling coil, and so the cooling coil is placed on a "DUMMY" plant, and the plants will be sized separately according to the load it needs to handle.

The TRACE program requires all spaces to be assigned to systems and all system components to be assigned to a plant regardless of whether the space is being conditioned. This includes interstitial spaces. To circumvent adding additional energy consumption by the system that will not "see" the space, a "DUMMY" system is set in place in which these spaces will be assigned. The particulars on how energy circumvention takes place at the plants set for this system.

Design Alternative 2

The second design alternative differs in the Primary and Secondary System selection—rather than VAV with Skin Baseboard Heating, the systems are set as Fan-Powered Terminal Units with Reheat on the plenum inlet. The other system settings remain unchanged from the first design alternative.

Daylighting Controls

Daylighting controls are utilized throughout all perimeter spaces with windows. To model this, a "Daylighting Controls Definition" is created. Geometry, daylighting control type, room parameters, glass, construction, and internal shade parameters are set here for all Alternatives. The Baseline Building is modeled with no daylighting controls and the Design Alternatives have daylighting controls available, 100%. Daylighting that is added to a space that has no fenestration is ignored by the program. The daylighting controller is the "Std Stepped Controller" template. This controller is added to the "Daylighting Reference Pt 1" under the "Room Parameters" tab.

Plants

Plant capacities are not user-defined. When the value is left blank, TRACE automatically determines plant capacity by summing the coil capacities attached to the plant. The "Equipment type" and "Heat rejection type" determines the equipments' unloading curves and fundamental energy rates. These pieces of equipment use "Standard" curve types – this selection indicates that a combination of ARI unloading curves and an ambient modification curve will be used to determine the power consumed at each of the hourly load conditions.

Baseline Building

According to ASHRAE 90.1 requirements, the cooling and heating plants for this project size is direct expansion cooling and fossil fuel furnace heating. The plants are labeled as "Cooling plant – 001" and

"Heating plant – 002." The cooling plant has an "air-cooled unitary" piece of equipment attached with an air-cooled condenser. The heating plant has a "gas-fired heat exchanger" attached.

The cooling equipment type is defined as the "90.1-07 Min PTAC New Cons > 15 MBh Cap." The sequencing type is defined as "Single" as there is only one piece of equipment that handles the entire cooling load. The equipment is set to reject condenser heat to the "heat rejection equipment," i.e. the air-cooled condenser. The heat rejection equipment is defined as a "90.1 Min Air Cooled Condenser." The energy rate is defined by TRACE's library of minimum efficiency values from ASHRAE 90.1.The heating equipment is defined as the "90.1-07 Min Gas Furnace < 225 MBh." The energy rate is defined according to the ASHRAE 90.1 requirements.

Design Alternatives 1

The Design Alternatives are set up with a main cooling plant and a main heating plant. These are labeled as "Cooling plant – 001" and "Heating plant – 002," respectively. Addition cooling plants are in place to handle cooling equipment not addressed by the main cooling plant, e.g. direct expansion for a stand-alone system. "DUMMY" plants are in place to host the "DUMMY" systems required to satisfy TRACE's requirement for every coil to be hosted by a plant without affection equipment and plant capacity calculations. The "DUMMY" plants are scheduled to "Off" – the equipment is arbitrarily defined as the equipment will not be functioning and therefore do not affect the load or energy consumption.

In the first Design Alternative (TRACE Alternative 2: Design w/ CT), the equipment type is a "water-cooled unitary" unit with a "cooling tower" and "condenser water pump." The equipment type is defined as "90.1-07 Min Other Heat SS/SP 135-240 MBh." Sequencing type is "Single" since there is one water-cooled unit. The equipment is set to reject condenser heat to the "Heat rejection equipment," the "90.1 Min Cooling Tower."

To ensure maximum effectiveness of the fan coil unit systems, a "Micro-Chiller" plant is modeled to satisfy the cooling load for those spaces. The Micro-Chiller rejects its heat to the Cooling Tower. TRACE is currently incapable of applying systems to specific plant components, so modeling the Micro-Chiller under the same plant as the water-cooled unitary equipment is not feasible. To get the performance benefit of running rejecting heat to an otherwise running cooling tower, the Micro-Chiller plant load is specified to exceed 50% of the total system load. This way, the cooling tower is modeled separately from the cooling tower assigned to the water-cooled unitary equipment, but mimics the heat rejection equipment performance as if the water-cooled unitary equipment and the Micro-Chiller were utilizing the same cooling tower.

The RA 5-9 and the Detachment 24 each have one boiler. The Battalion HQ and the RA 10-15 have two pieces of equipment under the "Heating plant – 002"–both of which are labeled as boilers ("Boiler – 002" and "Boiler – 003"). The two-boiler plants are set so TRACE sizes them to 60% of the total heating load.

Design Alternative 2

The plant used in the second design alternative is an “Air-Cooled Chiller.” Since a chiller is modeled as the primary plant, a Micro-Chiller is not required for the alternative.

Secondly, the loads satisfied by the Micro-Chiller in the first design alternative are distinguished. There are two “air-cooled unitary” units with “air-cooled condenser” units – one of which applies to the Evidence Depository and the other to the Telecommunications Room 2, as these systems are using direct expansion cooling. These are labeled as “Air-cooled condenser – Evid Dep” and “Air-cooled condenser – TR#2.” These units’ equipment types are set to “90.1-07 Min Room AC w/o louvers < 8MBh.”

Base Utilities

Base utilities are used to model loads that are not otherwise calculated by the TRACE program. These loads include exterior lighting and domestic hot water load. To model these loads, the hourly demand, plant (source), and load schedule is specified.

Exterior Lighting

The ext lighting is defined through creating a new "base utility" in TRACE. The requirement for ASHRAE/LEED is to calculate power consumption for the year. ASHRAE requires that the lighting is controlled by a combination of photo sensors and time switches, depending on whether the system is set for dusk-to-dawn operation. This will be handled by creating a new schedule for this base utility. The schedule parameters will be based on the Equinox, so the average amount of daylight for each hour through the span of 24 hours will be proportional to the amount of energy consumed by the ext lighting in the same span of 24 on each hour on a daily basis for an entire year. Using this approach will give accurate energy consumption by the ext lighting for the year, but the estimated energy consumption on a monthly basis is constant, which is not accurate.

The domestic hot water load is modeled as a base utility labeled “Domestic Hot Water Load.” In the Design Alternative, the plant satisfying the load is “Heating plant – 002.” This plant uses a combination of the boiler and solar hot water system to satisfy the load. The Baseline Building uses a separate plant to represent the domestic hot water heater. This equipment type is labeled as “90.1-04 Min (Res) 300-2,500 Mbh.” In both the Baseline Building and the Design Alternative, the hourly demand is the same and the schedules are both set to the occupancy schedule, “People – CIC Det24 Full Year.”

The solar hot water (SHW) system is modeled as a base utility with a negative demand—the domestic water load and heating load covered by the “Heating plant – 002” is credited by the base utility. The maximum capacity of the SHW system is determined based on highest solar insolation value for a fixed number of solar hot water panels. The subsequent monthly capacities are determined based on month’s solar insolation value, the total hours of daylight in a day (determined by parallel for the 20th of each month, based on the solstice), and the number of panels. After the capacity of the SHW system is determined for each month, each month is represented as a percentage of the maximum capacity and is input in a “Utilization Schedule.” Each month is modeled with approximate times of sunrise and sunset for the respective month with the percentage of maximum capacity—the percent capacity is defined

between sunrise and sunset and zero from sunset to sunrise. This schedule is applied to the base utility to credit the “Heating plant – 002” the appropriate amount of load throughout the year.

End of Summary

	Collector Info					Domestic Hot Water			Space Heating							Renewable Energy Production	
Month	Insolation Value (BTU/sf*day)	Day to Month Conversion	DHW flat plate collector area (sf)	System Capacity (BTU/month)	Effective System Capacity (BTU/month)	Domestic Hot Water Load per Day (BTU/day)	Domestic Hot Water Load per Month (BTU/month)	Extra Capacity not used by DHW Load (BTU/month)	Peak Heating Load (BTU/h)	HDD per Month	Assumed Indoor Temperature (°F)	Outdoor Air Temperature (°F)	Heating Requirement (BTU/month)	Heating Requirment for the Month (kBTU)	DHW + Space Heating Requirement (BTU/month)	SHW Capacity Credited to DHW Load (BTU/month)	Extra Capacity Credited to Space Heating (BTU/month)
Jan	348.9	26	240.9	2185300	1966770	230184	5984784	-4018014	62561	1256	68	2.7	28879614	28880	34864398	1966770	0
Feb	546.4	24	240.9	3159066	2843160	230184	5524416	-2681256	62561	1110	68	2.7	25522589	25523	31047005	2843160	0
Mar	888.5	27	240.9	5779071	5201163	230184	6214968	-1013805	62561	961	68	2.7	22096584	22097	28311552	5201163	0
Apr	1314.9	25	240.9	7918985	7127087	230184	5754600	1372487	62561	564	68	2.7	12968234	12968	18722834	5754600	1372487
May	1596.5	27	240.9	10384115	9345703	230184	6214968	3130735	62561	268	68	2.7	6162211	6162	12377179	6214968	3130735
Jun	1803.7	26	240.9	11297295	10167565	230184	5984784	4182781	62561	65	68	2.7	1494566	1495	7479350	5984784	1494566
Jul	1776.4	26	240.9	11126304	10013673	230184	5984784	4028889	62561	8	68	2.7	183947	184	6168731	5984784	183947
Aug	1513.2	27	240.9	9842307	8858076	230184	6214968	2643108	62561	21	68	2.7	482860	483	6697828	6214968	482860
Sep	1151.8	25	240.9	6936716	6243044	230184	5754600	488444	62561	149	68	2.7	3426005	3426	9180605	5754600	488444
Oct	784.4	27	240.9	5101973	4591776	230184	6214968	-1623192	62561	442	68	2.7	10163049	10163	16378017	4591776	0
Nov	403.4	26	240.9	2526656	2273990	230184	5984784	-3710794	62561	737	68	2.7	16946079	16946	22930863	2273990	0
Dec	283.3	26	240.9	1774421	1596979	230184	5984784	-4387805	62561	1081	68	2.7	24855782	24856	30840566	1596979	0

SHW System Information					Price of Gas Replaced by Renewable Energy				Payback Length (years)
Number of Panels	Area per Panel (sf)	System Heat Loss Factor	Price per Unit ($/sf)	Install Cost	Total System Use (kBTU)	Energy Conversion (1 Therm = 100 kBTU)	Cost ($/therm)	Total Cost per Year	
6	**40.15**	**0.9**	**$72.00**	**$17,344.80**	**61536**	**0.01**	**$0.79**	**$484.14**	**36**

Total System Use (kBTU)	61536	
Building Conditioned Area (sf)	9151	
Annual Renewable Energy Production	**6.72**	**kBTU/sf**

CIC RA 10-15 Adapt-Build Prototype

Location	**Fort Drum, NY**
Building owner	**US Army Corp of Engineers**
Program user	**JPB**
Company	**Parsons Brinckerhoff**
Comments	**TRACE 700 v6_2_7 - gbXML imported on Thursday, May 03, 2012 at 02:57 PM**
By	**PB**
Dataset name	**C:\Documents and Settings\bouley\Desktop\TRACE Docs\CIDC\RA 10-15\10-15_120817.TRC**
Calculation time	**09:03 AM on 08/20/2012**
TRACE® 700 version	**6.2.7**

Location	**Fort Drum, NY**	
Latitude	**44.0**	**deg**
Longitude	**75.7**	**deg**
Time Zone	**5**	
Elevation	**476**	**ft**
Barometric pressure	**29.4**	**in. Hg**
Air density	**0.0747**	**lb/cu ft**
Air specific heat	**0.2444**	**Btu/lb·°F**
Density-specific heat product	**1.0958**	**Btu/h·cfm·°F**
Latent heat factor	**4,823.6**	**Btu·min/h·cu ft**
Enthalpy factor	**4.4829**	**lb·min/hr·cu ft**
Summer design dry bulb	**84**	**°F**
Summer design wet bulb	**69**	**°F**
Winter design dry bulb	**-11**	**°F**
Summer clearness number	**1.00**	
Winter clearness number	**1.00**	
Summer ground reflectance	**0.20**	
Winter ground reflectance	**0.20**	
Carbon Dioxide Level	**400**	**ppm**
Design simulation period	**January - December**	
Cooling load methodology	**TETD-TA1**	
Heating load methodology	**UATD**	

System Checksums

By PB

PSZ-AC **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 5 / 1
Outside Air: OADB/WB/HR: 59 / 46 / 27

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	-28	-28	4
Glass Solar	405	0	405	-54
Glass/Door Cond	-95	0	-95	13
Wall Cond	-859	-169	-1,028	136
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	-14		-14	2
Sub Total ==>	-563	-197	-760	101
Internal Loads				
Lights	0	0	0	0
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	0	0	0	0
Ceiling Load	-213	213	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		5	5	-1
Sup. Fan Heat			0	0
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	-776	21	-755	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	405	-44
Glass/Door Cond	-95	10
Wall Cond	-979	107
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	-11	1
Sub Total ==>	-679	74
Internal Loads		
Lights	0	0
People	0	0
Misc	0	0
Sub Total ==>	0	0
Ceiling Load	-234	26
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Exhaust Heat		
OA Preheat Diff.		
RA Preheat Diff.		
Additional Reheat		
Underflr Sup Ht Pkup		
Supply Air Leakage		
***Grand Total* ==>**	-913	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-46	1.46
Glass Solar	0	0	0.00
Glass/Door Cond	-644	-644	20.71
Wall Cond	-1,970	-2,418	77.71
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-14	-14	0.46
Sub Total ==>	-2,629	-3,122	100.35
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-482	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		11	-0.35
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-3,111	-3,111	100.00

TEMPERATURES

	Cooling	Heating
SADB	80.0	55.0
Ra Plenum	58.0	5.3
Return	58.0	5.3
Ret/OA	58.0	5.3
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	0	0
Terminal	0	0
Main Fan	0	0
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	0	0
Return	0	0
Exhaust	0	0
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	0.00	0.00
cfm/ton	0.00	
ft²/ton	0.00	
Btu/hr·ft²	0.00	0.00
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.0	0.0	0.0	0	0.0	0.0	58.4	0.0	0.0	58.4
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	0.0								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	31		
Part	2,072		
Int Door	0		
ExFlr	0		
Roof	31	0	0
Wall	621	23	4
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	0.0	0	0.0	0.0
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	5.3	79.9
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	0.0			

System Checksums

By PB

System - 002 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 14
Outside Air: OADB/WB/HR: 83 / 69 / 84

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	1,085	1,085	8
Glass Solar	3,519	0	3,519	26
Glass/Door Cond	170	0	170	1
Wall Cond	438	282	720	5
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	97		97	1
Sub Total ==>	4,224	1,367	5,591	42
Internal Loads				
Lights	1,870	467	2,337	17
People	1,800	0	1,800	13
Misc	1,594	0	1,594	12
Sub Total ==>	5,264	467	5,731	43
Ceiling Load	478	-478	0	0
Ventilation Load	0	0	2,180	16
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-262	-262	-2
Sup. Fan Heat			58	0
Ret. Fan Heat		58	58	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	9,966	1,153	13,357	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	3,789	41
Glass/Door Cond	126	1
Wall Cond	408	4
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	29	0
Sub Total ==>	4,352	47
Internal Loads		
Lights	1,870	20
People	1,000	11
Misc	1,594	17
Sub Total ==>	4,464	48
Ceiling Load	459	5
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Exhaust Heat		
OA Preheat Diff.		
RA Preheat Diff.		
Additional Reheat		
Underflr Sup Ht Pkup		
Supply Air Leakage		
***Grand Total* ==>**	9,275	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-2,376	13.62
Glass Solar	0	0	0.00
Glass/Door Cond	-3,297	-3,297	18.90
Wall Cond	-1,841	-3,117	17.87
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-356	-356	2.04
Sub Total ==>	-5,495	-9,146	52.42
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-976	0	0.00
Ventilation Load	0	-6,576	37.69
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-799	-799	4.58
Exhaust Heat		424	-2.43
OA Preheat Diff.		-1,171	6.71
RA Preheat Diff.		-178	1.02
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-7,270	-17,447	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	86.6
Ra Plenum	77.4	65.1
Return	77.5	65.1
Ret/OA	78.5	53.5
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	489	489
Terminal	489	489
Main Fan	489	489
Sec Fan	0	0
Nom Vent	90	74
AHU Vent	90	74
Infil	4	4
MinStop/Rh	0	0
Return	493	493
Exhaust	94	78
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	18.4	15.1
cfm/ft²	0.79	0.79
cfm/ton	382.30	
ft²/ton	486.38	
Btu/hr·ft²	24.67	-30.62
No. People	4	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	1.3	15.4	12.7	489	78.4	63.1	63.3	55.0	52.2	54.9
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.3	15.4								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	623		
Part	3,915		
Int Door	0		
ExFlr	0		
Roof	656	0	0
Wall	727	115	16
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-19.1	489	51.0	86.6
Aux Htg	0.0	0	0.0	0.0
Preheat	-2.7	489	51.0	55.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-19.1			

System Checksums

By PB

System - 003 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 12
Outside Air: OADB/WB/HR: 79 / 65 / 74

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	1,493	1,493	10
Glass Solar	3,391	0	3,391	23
Glass/Door Cond	22	0	22	0
Wall Cond	432	296	728	5
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	109		109	1
Sub Total ==>	3,954	1,789	5,743	40
Internal Loads				
Lights	2,100	525	2,624	18
People	1,857	0	1,857	13
Misc	2,243	0	2,243	15
Sub Total ==>	6,199	525	6,724	46
Ceiling Load	726	-726	0	0
Ventilation Load	0	0	2,290	16
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-377	-377	-3
Sup. Fan Heat			68	0
Ret. Fan Heat		68	68	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	10,880	1,279	14,516	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	4,622	43
Glass/Door Cond	-69	-1
Wall Cond	368	3
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	1	0
Sub Total ==>	4,923	45
Internal Loads		
Lights	2,100	19
People	1,031	10
Misc	2,243	21
Sub Total ==>	5,374	50
Ceiling Load	524	5
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	10,820	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-3,371	13.49
Glass Solar	0	0	0.00
Glass/Door Cond	-1,318	-1,318	5.27
Wall Cond	-863	-1,444	5.78
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-502	-502	2.01
Sub Total ==>	-2,683	-6,634	26.54
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-1,207	0	0.00
Ventilation Load	0	-8,847	35.39
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-8,185	-8,185	32.75
Exhaust Heat		500	-2.00
OA Preheat Diff.		-1,575	6.30
RA Preheat Diff.		-254	1.02
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-12,075	-24,995	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	90.9
Ra Plenum	77.6	65.7
Return	77.7	65.7
Ret/OA	78.0	52.3
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	571	571
Terminal	571	571
Main Fan	571	571
Sec Fan	0	0
Nom Vent	121	100
AHU Vent	121	100
Infil	6	6
MinStop/Rh	0	0
Return	576	576
Exhaust	127	105
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	21.3	17.5
cfm/ft²	0.65	0.65
cfm/ton	410.38	
ft²/ton	629.91	
Btu/hr·ft²	19.05	-29.63
No. People	4	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	1.4	16.7	13.8	571	78.2	62.5	60.8	55.0	52.3	55.2
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.4	16.7								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	876		
Part	4,646		
Int Door	0		
ExFlr	0		
Roof	924	0	0
Wall	329	46	14
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-26.0	571	49.4	90.9
Aux Htg	0.0	0	0.0	0.0
Preheat	-4.4	571	49.4	55.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-26.0			

System Checksums

By PB

System - 004 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	1,906	1,906	12
Glass Solar	1,927	0	1,927	12
Glass/Door Cond	244	0	244	2
Wall Cond	230	140	370	2
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	177		177	1
Sub Total ==>	2,578	2,046	4,624	29
Internal Loads				
Lights	2,441	610	3,052	19
People	1,800	0	1,800	11
Misc	2,678	0	2,678	17
Sub Total ==>	6,919	610	7,529	48
Ceiling Load	987	-987	0	0
Ventilation Load	0	0	3,971	25
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-536	-536	-3
Sup. Fan Heat			60	0
Ret. Fan Heat		61	61	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	10,484	1,194	15,709	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	1,927	20
Glass/Door Cond	244	3
Wall Cond	230	2
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	64	1
Sub Total ==>	2,466	26
Internal Loads		
Lights	2,441	26
People	1,000	10
Misc	2,678	28
Sub Total ==>	6,119	64
Ceiling Load	987	10
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	9,572	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-3,961	16.85
Glass Solar	0	0	0.00
Glass/Door Cond	-2,991	-2,991	12.72
Wall Cond	-1,368	-2,359	10.03
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-599	-599	2.55
Sub Total ==>	-4,958	-9,910	42.15
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-1,840	0	0.00
Ventilation Load	0	-11,050	46.99
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-1,103	-1,103	4.69
Exhaust Heat		798	-3.39
OA Preheat Diff.		-1,967	8.37
RA Preheat Diff.		-282	1.20
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-7,901	-23,514	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	87.4
Ra Plenum	78.0	64.5
Return	78.1	64.5
Ret/OA	79.8	45.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	505	505
Terminal	505	505
Main Fan	505	505
Sec Fan	0	0
Nom Vent	152	125
AHU Vent	152	125
Infil	7	7
MinStop/Rh	0	0
Return	512	512
Exhaust	158	131
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	30.0	24.7
cfm/ft²	0.48	0.48
cfm/ton	335.45	
ft²/ton	694.91	
Btu/hr·ft²	17.27	-24.10
No. People	4	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	1.5	18.1	14.1	505	79.8	64.6	68.4	55.0	52.5	56.0
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.5	18.1								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	1,046		
Part	8,225		
Int Door	0		
ExFlr	0		
Roof	1,103	0	0
Wall	570	105	18
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-25.2	505	41.8	87.4
Aux Htg	0.0	0	0.0	0.0
Preheat	-9.1	505	41.8	55.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-25.2			

System Checksums

By PB

System - 005 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	234	234	12
Glass Solar	76	0	76	4
Glass/Door Cond	99	0	99	5
Wall Cond	49	28	77	4
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	24		24	1
Sub Total ==>	248	262	510	25
Internal Loads				
Lights	546	136	682	34
People	0	0	0	0
Misc	341	0	341	17
Sub Total ==>	887	136	1,023	51
Ceiling Load	144	-144	0	0
Ventilation Load	0	0	545	27
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-78	-78	-4
Sup. Fan Heat			8	0
Ret. Fan Heat		8	8	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	1,278	185	2,016	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	75	6
Glass/Door Cond	111	9
Wall Cond	55	4
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	8	1
Sub Total ==>	248	19
Internal Loads		
Lights	546	43
People	0	0
Misc	341	27
Sub Total ==>	887	69
Ceiling Load	144	11
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
***Grand Total* ==>**	1,279	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-500	12.21
Glass Solar	0	0	0.00
Glass/Door Cond	-1,408	-1,408	34.37
Wall Cond	-310	-534	13.04
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-76	-76	1.86
Sub Total ==>	-1,794	-2,519	61.48
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-261	0	0.00
Ventilation Load	0	-1,407	34.35
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		113	-2.77
OA Preheat Diff.		-251	6.12
RA Preheat Diff.		-33	0.82
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-2,055	-4,096	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	104.7
Ra Plenum	78.4	63.8
Return	78.5	63.8
Ret/OA	80.0	46.2
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	68	68
Terminal	68	68
Main Fan	68	68
Sec Fan	0	0
Nom Vent	19	16
AHU Vent	19	16
Infil	1	1
MinStop/Rh	0	0
Return	68	68
Exhaust	20	17
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	28.6	23.5
cfm/ft²	0.51	0.51
cfm/ton	349.33	
ft²/ton	689.51	
Btu/hr·ft²	17.40	-34.60
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.2	2.3	1.9	68	80.0	64.2	66.0	55.0	52.5	55.9
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	2.3								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	133		
Part	1,006		
Int Door	0		
ExFlr	0		
Roof	140	0	0
Wall	106	0	0
Ext Door	24	24	100

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-4.6	68	42.4	104.7
Aux Htg	0.0	0	0.0	0.0
Preheat	-1.2	68	42.4	55.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-4.6			

System Checksums

By PB

System - 006 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	819	819	13
Glass Solar	142	0	142	2
Glass/Door Cond	227	0	227	3
Wall Cond	205	103	308	5
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	80		80	1
Sub Total ==>	654	922	1,576	24
Internal Loads				
Lights	1,808	452	2,260	35
People	0	0	0	0
Misc	1,130	0	1,130	17
Sub Total ==>	2,938	452	3,390	52
Ceiling Load	509	-509	0	0
Ventilation Load	0	0	1,801	28
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-275	-275	-4
Sup. Fan Heat			25	0
Ret. Fan Heat		26	26	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	4,101	616	6,543	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	136	3
Glass/Door Cond	236	6
Wall Cond	224	6
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	25	1
Sub Total ==>	621	15
Internal Loads		
Lights	1,808	45
People	0	0
Misc	1,130	28
Sub Total ==>	2,938	72
Ceiling Load	499	12
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
***Grand Total* ==>**	4,059	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-1,656	14.28
Glass Solar	0	0	0.00
Glass/Door Cond	-2,614	-2,614	22.55
Wall Cond	-1,141	-1,848	15.94
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-253	-253	2.18
Sub Total ==>	-4,008	-6,371	54.95
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-875	0	0.00
Ventilation Load	0	-4,663	40.22
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		380	-3.27
OA Preheat Diff.		-830	7.16
RA Preheat Diff.		-110	0.95
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-4,883	-11,594	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	96.0
Ra Plenum	78.6	63.7
Return	78.8	63.7
Ret/OA	80.2	45.4
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	214	214
Terminal	214	214
Main Fan	214	214
Sec Fan	0	0
Nom Vent	64	53
AHU Vent	64	53
Infil	3	3
MinStop/Rh	0	0
Return	217	217
Exhaust	67	55
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	29.9	24.5
cfm/ft²	0.49	0.49
cfm/ton	341.47	
ft²/ton	703.95	
Btu/hr·ft²	17.05	-29.03
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.6	7.5	6.1	214	80.2	64.3	66.4	55.0	52.4	55.6
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.6	7.5								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	441		
Part	1,564		
Int Door	0		
ExFlr	0		
Roof	465	0	0
Wall	365	0	0
Ext Door	45	45	100

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-12.8	214	41.4	96.0
Aux Htg	0.0	0	0.0	0.0
Preheat	-4.0	214	41.4	55.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-12.8			

System Checksums

By PB

System - 007 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	251	251	13
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	26		26	1
Sub Total ==>	26	251	277	15
Internal Loads				
Lights	589	147	736	39
People	0	0	0	0
Misc	368	0	368	20
Sub Total ==>	957	147	1,104	59
Ceiling Load	162	-162	0	0
Ventilation Load	0	0	578	31
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-88	-88	-5
Sup. Fan Heat			7	0
Ret. Fan Heat		7	7	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	1,145	156	1,885	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	9	1
Sub Total ==>	9	1
Internal Loads		
Lights	589	52
People	0	0
Misc	368	33
Sub Total ==>	957	85
Ceiling Load	162	14
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Exhaust Heat		
OA Preheat Diff.		
RA Preheat Diff.		
Additional Reheat		
Underflr Sup Ht Pkup		
Supply Air Leakage		
***Grand Total* ==>**	1,128	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-549	23.22
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-82	-82	3.48
Sub Total ==>	-82	-631	26.70
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-224	0	0.00
Ventilation Load	0	-1,518	64.22
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		97	-4.10
OA Preheat Diff.		-270	11.43
RA Preheat Diff.		-41	1.75
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-306	-2,364	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	75.9
Ra Plenum	78.6	65.1
Return	78.7	65.1
Ret/OA	80.4	43.2
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	60	60
Terminal	60	60
Main Fan	60	60
Sec Fan	0	0
Nom Vent	21	17
AHU Vent	21	17
Infil	1	1
MinStop/Rh	0	0
Return	60	60
Exhaust	22	18
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	35.0	28.7
cfm/ft²	0.41	0.41
cfm/ton	329.39	
ft²/ton	795.64	
Btu/hr·ft²	15.08	-16.98
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.2	2.2	1.7	60	80.4	64.7	68.2	55.0	52.5	55.8
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.2	2.2								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	144		
Part	1,318		
Int Door	0		
ExFlr	0		
Roof	151	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-2.4	60	38.4	75.9
Aux Htg	0.0	0	0.0	0.0
Preheat	-1.4	60	38.4	55.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-2.4			

System Checksums

By PB

System - 008 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 18
Outside Air: OADB/WB/HR: 80 / 66 / 75

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	257	257	6
Glass Solar	1,833	0	1,833	43
Glass/Door Cond	47	0	47	1
Wall Cond	184	133	317	7
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	17		17	0
Sub Total ==>	2,081	389	2,470	58
Internal Loads				
Lights	458	115	573	13
People	450	0	450	11
Misc	391	0	391	9
Sub Total ==>	1,299	115	1,414	33
Ceiling Load	99	-99	0	0
Ventilation Load	0	0	382	9
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-55	-55	-1
Sup. Fan Heat			21	0
Ret. Fan Heat		21	21	1
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	3,479	371	4,254	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	1,959	58
Glass/Door Cond	36	1
Wall Cond	204	6
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	2	0
Sub Total ==>	2,201	65
Internal Loads		
Lights	458	14
People	250	7
Misc	391	12
Sub Total ==>	1,099	32
Ceiling Load	89	3
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
***Grand Total* ==>**	3,389	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-594	15.66
Glass Solar	0	0	0.00
Glass/Door Cond	-659	-659	17.36
Wall Cond	-335	-577	15.20
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-87	-87	2.30
Sub Total ==>	-1,081	-1,917	50.52
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-165	0	0.00
Ventilation Load	0	-1,612	42.48
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		72	-1.88
OA Preheat Diff.		-287	7.56
RA Preheat Diff.		-50	1.33
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-1,246	-3,795	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	78.0
Ra Plenum	77.1	66.6
Return	77.2	66.6
Ret/OA	77.5	58.7
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	179	179
Terminal	179	179
Main Fan	179	179
Sec Fan	0	0
Nom Vent	22	18
AHU Vent	22	18
Infil	1	1
MinStop/Rh	0	0
Return	180	180
Exhaust	23	19
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	12.4	10.2
cfm/ft²	1.17	1.17
cfm/ton	438.57	
ft²/ton	374.39	
Btu/hr·ft²	32.05	-26.91
No. People	1	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.4	4.9	4.3	179	77.5	61.8	59.0	55.0	52.3	55.0
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.4	4.9								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	153		
Part	1,370		
Int Door	0		
ExFlr	0		
Roof	161	0	0
Wall	135	23	17
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-4.1	179	57.0	78.0
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-4.1			

System Checksums

By PB

System - 009 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	1,166	1,166	19
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	433	205	638	10
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	89		89	1
Sub Total ==>	521	1,371	1,892	31
Internal Loads				
Lights	1,087	272	1,358	22
People	0	0	0	0
Misc	1,273	0	1,273	21
Sub Total ==>	2,360	272	2,632	43
Ceiling Load	705	-705	0	0
Ventilation Load	0	0	1,995	32
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-378	-378	-6
Sup. Fan Heat			22	0
Ret. Fan Heat		23	23	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	3,586	583	6,186	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	498	14
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	29	1
Sub Total ==>	526	15
Internal Loads		
Lights	1,087	30
People	0	0
Misc	1,273	36
Sub Total ==>	2,360	66
Ceiling Load	682	19
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
***Grand Total* ==>**	3,569	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-1,856	19.07
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	-1,152	-1,740	17.87
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-285	-285	2.93
Sub Total ==>	-1,437	-3,880	39.87
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-1,048	0	0.00
Ventilation Load	0	-5,254	53.98
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		455	-4.67
OA Preheat Diff.		-935	9.61
RA Preheat Diff.		-118	1.22
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-2,485	-9,733	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	85.1
Ra Plenum	79.5	63.4
Return	79.6	63.4
Ret/OA	81.2	40.0
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	188	188
Terminal	188	188
Main Fan	188	188
Sec Fan	0	0
Nom Vent	72	59
AHU Vent	72	59
Infil	3	3
MinStop/Rh	0	0
Return	191	191
Exhaust	75	62
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	38.3	31.4
cfm/ft²	0.38	0.38
cfm/ton	317.61	
ft²/ton	839.15	
Btu/hr·ft²	14.30	-20.82
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.6	7.1	5.5	188	81.2	65.2	69.1	55.0	52.5	55.9
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.6	7.1								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	497		
Part	1,964		
Int Door	0		
ExFlr	0		
Roof	524	0	0
Wall	343	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-10.4	188	34.9	85.1
Aux Htg	0.0	0	0.0	0.0
Preheat	-5.2	188	34.9	55.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-10.4			

System Checksums

By PB

System - 010 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	1,009	1,009	20
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	76		76	2
Sub Total ==>	76	1,009	1,085	22
Internal Loads				
Lights	671	168	839	17
People	450	0	450	9
Misc	1,187	0	1,187	24
Sub Total ==>	2,308	168	2,476	49
Ceiling Load	564	-564	0	0
Ventilation Load	0	0	1,714	34
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-304	-304	-6
Sup. Fan Heat			17	0
Ret. Fan Heat		17	17	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	2,948	326	5,005	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	29	1
Sub Total ==>	29	1
Internal Loads		
Lights	671	25
People	250	9
Misc	1,187	44
Sub Total ==>	2,108	78
Ceiling Load	564	21
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	2,701	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-1,751	21.21
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-265	-265	3.21
Sub Total ==>	-265	-2,017	24.42
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-840	0	0.00
Ventilation Load	0	-4,897	59.29
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-715	-715	8.66
Exhaust Heat		364	-4.41
OA Preheat Diff.		-872	10.56
RA Preheat Diff.		-123	1.48
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-1,821	-8,259	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	83.4
Ra Plenum	78.8	64.3
Return	79.0	64.3
Ret/OA	81.2	35.1
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	142	142
Terminal	142	142
Main Fan	142	142
Sec Fan	0	0
Nom Vent	67	55
AHU Vent	67	55
Infil	3	3
MinStop/Rh	0	0
Return	145	145
Exhaust	70	58
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	47.2	38.7
cfm/ft²	0.31	0.31
cfm/ton	297.04	
ft²/ton	966.53	
Btu/hr·ft²	12.42	-18.41
No. People	1	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.5	5.8	4.2	142	81.2	66.0	73.1	55.0	52.6	56.3
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.5	5.8								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	464		
Part	4,409		
Int Door	0		
ExFlr	0		
Roof	489	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-8.5	142	28.8	83.4
Aux Htg	0.0	0	0.0	0.0
Preheat	-5.1	142	28.8	55.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-8.5			

System Checksums

By PB

System - 011 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	1,732	1,732	13
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	120		120	1
Sub Total ==>	120	1,732	1,853	14
Internal Loads				
Lights	2,028	507	2,535	19
People	4,561	0	4,561	33
Misc	2,138	0	2,138	16
Sub Total ==>	8,726	507	9,233	68
Ceiling Load	865	-865	0	0
Ventilation Load	0	0	2,700	20
Adj Air Trans Heat	133		133	1
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-355	-355	-3
Sup. Fan Heat			48	0
Ret. Fan Heat		45	45	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	9,844	1,065	13,658	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	51	1
Sub Total ==>	51	1
Internal Loads		
Lights	2,028	26
People	2,534	33
Misc	2,138	28
Sub Total ==>	6,699	86
Ceiling Load	865	11
Ventilation Load	0	0
Adj Air Trans Heat	133	2
Ov/Undr Sizing	0	0
***Grand Total* ==>**	7,749	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-3,200	15.05
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-478	-478	2.25
Sub Total ==>	-478	-3,678	17.29
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-1,226	0	0.00
Ventilation Load	0	-8,820	41.47
Adj Air Trans Heat	-330	-330	2
Ov/Undr Sizing	-7,026	-7,026	33.04
Exhaust Heat		403	-1.90
OA Preheat Diff.		-1,570	7.38
RA Preheat Diff.		-247	1.16
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-9,060	-21,268	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	91.4
Ra Plenum	78.3	65.4
Return	78.4	65.4
Ret/OA	80.0	46.8
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	409	409
Terminal	409	409
Main Fan	409	409
Sec Fan	0	0
Nom Vent	121	99
AHU Vent	121	99
Infil	5	5
MinStop/Rh	0	0
Return	384	389
Exhaust	96	79
Rm Exh	31	25
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	29.6	24.3
cfm/ft²	0.49	0.49
cfm/ton	312.33	
ft²/ton	637.99	
Btu/hr·ft²	18.81	-26.08
No. People	10	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	1.3	15.7	11.5	409	80.0	65.4	72.3	55.0	52.6	56.3
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.3	15.7								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	835		
Part	8,306		
Int Door	0		
ExFlr	0		
Roof	880	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-21.8	409	42.8	91.4
Aux Htg	0.0	0	0.0	0.0
Preheat	-6.9	409	42.8	55.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-21.8			

System Checksums

By PB

System - 012 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	1,074	1,074	8
Glass Solar	4,452	0	4,452	32
Glass/Door Cond	9	0	9	0
Wall Cond	633	378	1,011	7
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	70		70	1
Sub Total ==>	5,165	1,452	6,616	47
Internal Loads				
Lights	1,739	435	2,174	16
People	2,250	0	2,250	16
Misc	1,482	0	1,482	11
Sub Total ==>	5,471	435	5,906	42
Ceiling Load	446	-446	0	0
Ventilation Load	0	0	1,583	11
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-244	-244	-2
Sup. Fan Heat			64	0
Ret. Fan Heat		64	64	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	11,082	1,260	13,989	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	5,097	50
Glass/Door Cond	-264	-3
Wall Cond	523	5
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	-10	0
Sub Total ==>	5,346	53
Internal Loads		
Lights	1,739	17
People	1,250	12
Misc	1,482	15
Sub Total ==>	4,471	44
Ceiling Load	352	3
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	10,169	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-2,236	13.32
Glass Solar	0	0	0.00
Glass/Door Cond	-1,319	-1,319	7.86
Wall Cond	-1,465	-2,366	14.10
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-331	-331	1.98
Sub Total ==>	-3,115	-6,252	37.26
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-742	0	0.00
Ventilation Load	0	-6,116	36.44
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-3,466	-3,466	20.66
Exhaust Heat		322	-1.92
OA Preheat Diff.		-1,089	6.49
RA Preheat Diff.		-181	1.08
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-7,324	-16,782	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	84.1
Ra Plenum	77.4	66.0
Return	77.3	66.0
Ret/OA	78.3	56.1
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	537	537
Terminal	537	537
Main Fan	537	537
Sec Fan	0	0
Nom Vent	84	69
AHU Vent	84	69
Infil	4	4
MinStop/Rh	0	0
Return	540	540
Exhaust	88	73
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	15.6	12.8
cfm/ft²	0.93	0.93
cfm/ton	400.21	
ft²/ton	431.91	
Btu/hr·ft²	27.78	-30.65
No. People	5	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	1.3	16.1	13.7	537	77.9	62.5	61.6	55.0	52.1	54.4
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.3	16.1								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	579		
Part	4,111		
Int Door	0		
ExFlr	0		
Roof	610	0	0
Wall	507	46	9
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-17.8	537	53.9	84.1
Aux Htg	0.0	0	0.0	0.0
Preheat	-0.8	537	53.9	55.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-17.8			

System Checksums

By PB

System - 013 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	618	618	16
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	49		49	1
Sub Total ==>	49	618	667	17
Internal Loads				
Lights	894	224	1,118	28
People	450	0	450	11
Misc	762	0	762	19
Sub Total ==>	2,106	224	2,330	59
Ceiling Load	348	-348	0	0
Ventilation Load	0	0	1,113	28
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-188	-188	-5
Sup. Fan Heat			14	0
Ret. Fan Heat		14	14	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	2,504	320	3,950	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	18	1
Sub Total ==>	18	1
Internal Loads		
Lights	894	39
People	250	11
Misc	762	34
Sub Total ==>	1,906	84
Ceiling Load	348	15
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
***Grand Total* ==>**	2,273	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-1,136	23.22
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-170	-170	3.48
Sub Total ==>	-170	-1,306	26.70
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-470	0	0.00
Ventilation Load	0	-3,145	64.29
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		204	-4.17
OA Preheat Diff.		-560	11.44
RA Preheat Diff.		-85	1.74
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-641	-4,892	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	76.1
Ra Plenum	78.7	65.0
Return	78.8	65.0
Ret/OA	80.6	42.6
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	120	120
Terminal	120	120
Main Fan	120	120
Sec Fan	0	0
Nom Vent	43	35
AHU Vent	43	35
Infil	2	2
MinStop/Rh	0	0
Return	122	122
Exhaust	45	37
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	36.0	29.5
cfm/ft²	0.40	0.40
cfm/ton	316.76	
ft²/ton	786.46	
Btu/hr·ft²	15.26	-16.97
No. People	1	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.4	4.5	3.5	120	80.6	65.2	70.2	55.0	52.5	56.0
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.4	4.5								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	298		
Part	1,831		
Int Door	0		
ExFlr	0		
Roof	314	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-5.1	120	37.7	76.1
Aux Htg	0.0	0	0.0	0.0
Preheat	-2.9	120	37.7	55.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-5.1			

System Checksums

By PB

System - 014 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	1,653	1,653	11
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	101		101	1
Sub Total ==>	101	1,653	1,754	12
Internal Loads				
Lights	1,393	348	1,742	12
People	7,200	0	7,200	49
Misc	2,056	0	2,056	14
Sub Total ==>	10,649	348	10,997	74
Ceiling Load	713	-713	0	0
Ventilation Load	0	0	2,279	15
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-326	-326	-2
Sup. Fan Heat			51	0
Ret. Fan Heat		50	50	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	11,464	1,011	14,805	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	49	1
Sub Total ==>	49	1
Internal Loads		
Lights	1,393	17
People	4,000	49
Misc	2,056	25
Sub Total ==>	7,449	91
Ceiling Load	713	9
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	8,212	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-3,091	18.06
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-460	-460	2.69
Sub Total ==>	-460	-3,551	20.75
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-1,096	0	0.00
Ventilation Load	0	-8,482	49.57
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-3,722	-3,722	21.76
Exhaust Heat		400	-2.34
OA Preheat Diff.		-1,510	8.83
RA Preheat Diff.		-245	1.43
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-5,278	-17,109	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	81.9
Ra Plenum	77.8	65.7
Return	77.9	65.7
Ret/OA	79.5	48.8
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	433	433
Terminal	433	433
Main Fan	433	433
Sec Fan	0	0
Nom Vent	116	96
AHU Vent	116	96
Infil	5	5
MinStop/Rh	0	0
Return	419	422
Exhaust	102	85
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	26.9	22.1
cfm/ft²	0.54	0.54
cfm/ton	305.35	
ft²/ton	565.98	
Btu/hr·ft²	21.20	-21.79
No. People	16	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB/WB/HR °F	Enter DB/WB/HR °F	Enter DB/WB/HR gr/lb	Leave DB/WB/HR °F	Leave DB/WB/HR °F	Leave DB/WB/HR gr/lb
Main Clg	1.4	17.0	11.9	433	79.5	65.7	74.6	55.0	52.7	56.7
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.4	17.0								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	803		
Part	4,859		
Int Door	0		
ExFlr	0		
Roof	846	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-17.5	433	45.1	81.9
Aux Htg	0.0	0	0.0	0.0
Preheat	-5.9	433	45.1	55.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-17.5			

System Checksums

By PB

System - 015 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 9 / 15
Outside Air: OADB/WB/HR: 78 / 64 / 68

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	1,126	1,126	6
Glass Solar	7,985	0	7,985	41
Glass/Door Cond	28	0	28	0
Wall Cond	396	307	703	4
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	67		67	0
Sub Total ==>	8,475	1,433	9,908	50
Internal Loads				
Lights	1,660	415	2,075	11
People	4,372	0	4,372	22
Misc	1,722	0	1,722	9
Sub Total ==>	7,755	415	8,170	42
Ceiling Load	378	-378	0	0
Ventilation Load	0	0	1,507	8
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-125	-125	-1
Sup. Fan Heat			93	0
Ret. Fan Heat		90	90	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	16,608	1,436	19,644	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	9,198	62
Glass/Door Cond	-474	-3
Wall Cond	178	1
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	-33	0
Sub Total ==>	8,869	59
Internal Loads		
Lights	1,660	11
People	2,429	16
Misc	1,722	12
Sub Total ==>	5,811	39
Ceiling Load	254	2
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	14,934	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-2,627	16.19
Glass Solar	0	0	0.00
Glass/Door Cond	-2,332	-2,332	14.37
Wall Cond	-926	-1,648	10.16
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-385	-385	2.37
Sub Total ==>	-3,643	-6,992	43.10
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-679	0	0.00
Ventilation Load	0	-7,107	43.80
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-832	-832	5.13
Exhaust Heat		198	-1.22
OA Preheat Diff.		-1,265	7.80
RA Preheat Diff.		-226	1.40
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-5,154	-16,225	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	77.2
Ra Plenum	76.8	66.8
Return	76.7	66.8
Ret/OA	76.8	58.9
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	788	788
Terminal	788	788
Main Fan	788	788
Sec Fan	0	0
Nom Vent	98	80
AHU Vent	98	80
Infil	4	4
MinStop/Rh	0	0
Return	759	765
Exhaust	69	57
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	12.4	10.2
cfm/ft²	1.17	1.17
cfm/ton	418.52	
ft²/ton	357.43	
Btu/hr·ft²	33.57	-25.72
No. People	10	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	1.9	22.6	19.2	788	77.1	62.0	60.5	55.0	52.0	54.0
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.9	22.6								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	673		
Part	4,561		
Int Door	0		
ExFlr	0		
Roof	709	0	0
Wall	402	82	20
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-17.3	788	57.2	77.2
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-17.3			

System Checksums

By PB

System - 016 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	1,342	1,342	13
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	503	244	747	7
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	100		100	1
Sub Total ==>	603	1,586	2,189	22
Internal Loads				
Lights	1,423	356	1,779	18
People	1,821	0	1,821	18
Misc	1,589	0	1,589	16
Sub Total ==>	4,833	356	5,189	51
Ceiling Load	876	-876	0	0
Ventilation Load	0	0	2,252	22
Adj Air Trans Heat	406		406	4
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	1		1	0
Exhaust Heat		0	0	0
Sup. Fan Heat			37	0
Ret. Fan Heat		26	26	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	6,718	1,092	10,098	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	507	9
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	38	1
Sub Total ==>	545	9
Internal Loads		
Lights	1,423	24
People	1,012	17
Misc	1,589	27
Sub Total ==>	4,024	69
Ceiling Load	872	15
Ventilation Load	0	0
Adj Air Trans Heat	406	7
Ov/Undr Sizing	1	0
Grand Total ==>	5,847	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-2,296	15.53
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	-1,154	-1,745	11.80
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-355	-355	2.40
Sub Total ==>	-1,510	-4,396	29.73
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-1,251	0	0.00
Ventilation Load	0	-6,557	44.35
Adj Air Trans Heat	-1,008	-1,008	7
Ov/Undr Sizing	-1,504	-1,504	10.17
Exhaust Heat		0	0.00
OA Preheat Diff.		-1,167	7.90
RA Preheat Diff.		-153	1.03
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-5,273	-14,785	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	88.4
Ra Plenum	79.5	63.6
Return	79.6	63.6
Ret/OA	80.8	45.8
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	308	308
Terminal	308	308
Main Fan	308	308
Sec Fan	0	0
Nom Vent	90	74
AHU Vent	90	74
Infil	4	4
MinStop/Rh	0	0
Return	218	235
Exhaust	0	0
Rm Exh	147	122
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	29.2	23.9
cfm/ft²	0.50	0.50
cfm/ton	318.77	
ft²/ton	641.47	
Btu/hr·ft²	18.71	-25.34
No. People	4	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	1.0	11.6	9.0	308	80.8	65.1	69.4	55.0	52.5	55.8
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.0	11.6								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	621		
Part	5,672		
Int Door	0		
ExFlr	0		
Roof	646	0	0
Wall	343	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-15.7	308	41.9	88.4
Aux Htg	0.0	0	0.0	0.0
Preheat	-5.6	308	41.9	55.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-15.7			

System Checksums

By PB

System - 017 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	615	615	10
Glass Solar	1,341	0	1,341	22
Glass/Door Cond	59	0	59	1
Wall Cond	177	122	300	5
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	43		43	1
Sub Total ==>	1,620	737	2,358	38
Internal Loads				
Lights	343	86	428	7
People	1,800	0	1,800	29
Misc	643	0	643	10
Sub Total ==>	2,785	86	2,871	47
Ceiling Load	186	-186	0	0
Ventilation Load	0	0	969	16
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-102	-102	-2
Sup. Fan Heat			29	0
Ret. Fan Heat		29	29	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	4,592	564	6,154	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	2,695	58
Glass/Door Cond	-128	-3
Wall Cond	86	2
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	-26	-1
Sub Total ==>	2,628	56
Internal Loads		
Lights	343	7
People	1,000	21
Misc	643	14
Sub Total ==>	1,985	43
Ceiling Load	55	1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
***Grand Total* ==>**	4,668	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-976	17.73
Glass Solar	0	0	0.00
Glass/Door Cond	-659	-659	11.98
Wall Cond	-377	-642	11.66
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-144	-144	2.61
Sub Total ==>	-1,180	-2,421	43.98
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-281	0	0.00
Ventilation Load	0	-2,652	48.17
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		122	-2.21
OA Preheat Diff.		-472	8.58
RA Preheat Diff.		-82	1.49
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-1,461	-5,505	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	76.8
Ra Plenum	77.3	66.5
Return	77.5	66.5
Ret/OA	78.4	57.1
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	246	246
Terminal	246	246
Main Fan	246	246
Sec Fan	0	0
Nom Vent	36	30
AHU Vent	36	30
Infil	2	2
MinStop/Rh	0	0
Return	248	248
Exhaust	38	31
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	14.8	12.1
cfm/ft²	0.98	0.98
cfm/ton	417.57	
ft²/ton	425.68	
Btu/hr·ft²	28.19	-23.38
No. People	4	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.6	7.1	5.4	246	78.4	63.2	64.2	55.0	53.5	59.6
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.6	7.1								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	251		
Part	1,326		
Int Door	0		
ExFlr	0		
Roof	265	0	0
Wall	148	23	16
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-5.9	246	55.0	76.8
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-5.9			

System Checksums

By PB

System - 018 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	61	61	6
Glass Solar	228	0	228	22
Glass/Door Cond	90	0	90	9
Wall Cond	17	19	36	4
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	12		12	1
Sub Total ==>	347	80	427	42
Internal Loads				
Lights	90	22	112	11
People	0	0	0	0
Misc	168	0	168	17
Sub Total ==>	258	22	280	28
Ceiling Load	35	-35	0	0
Ventilation Load	0	0	271	27
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	49		49	5
Exhaust Heat		-19	-19	-2
Sup. Fan Heat			4	0
Ret. Fan Heat		4	4	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	688	53	1,015	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	230	33
Glass/Door Cond	105	15
Wall Cond	19	3
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	4	1
Sub Total ==>	357	51
Internal Loads		
Lights	90	13
People	0	0
Misc	168	24
Sub Total ==>	258	37
Ceiling Load	34	5
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	49	7
Grand Total ==>	697	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-246	8.82
Glass Solar	0	0	0.00
Glass/Door Cond	-1,476	-1,476	52.94
Wall Cond	-113	-252	9.03
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-38	-38	1.35
Sub Total ==>	-1,626	-2,011	72.14
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-131	0	0.00
Ventilation Load	0	-694	24.88
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		57	-2.04
OA Preheat Diff.		-124	4.43
RA Preheat Diff.		-16	0.58
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-1,757	-2,788	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	125.0
Ra Plenum	76.7	63.7
Return	76.8	63.7
Ret/OA	78.6	47.7
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	36	36
Terminal	36	36
Main Fan	36	36
Sec Fan	0	0
Nom Vent	10	8
AHU Vent	10	8
Infil	0	0
MinStop/Rh	0	0
Return	37	37
Exhaust	10	8
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	26.1	21.4
cfm/ft²	0.55	0.55
cfm/ton	376.97	
ft²/ton	679.32	
Btu/hr·ft²	17.66	-49.14
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.1	1.2	0.9	36	78.6	63.5	65.1	55.0	52.6	56.4
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	1.2								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	66		
Part	756		
Int Door	0		
ExFlr	0		
Roof	69	0	0
Wall	60	9	16
Ext Door	21	21	100

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.2	36	44.2	125.0
Aux Htg	0.0	0	0.0	0.0
Preheat	-0.5	36	44.2	55.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.2			

System Checksums

By PB

System - 019 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 18
Outside Air: OADB/WB/HR: 80 / 66 / 75

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	791	791	5
Glass Solar	9,590	0	9,590	57
Glass/Door Cond	490	0	490	3
Wall Cond	636	482	1,118	7
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	76		76	0
Sub Total ==>	10,791	1,273	12,065	71
Internal Loads				
Lights	1,278	320	1,598	9
People	0	0	0	0
Misc	1,498	0	1,498	9
Sub Total ==>	2,776	320	3,095	18
Ceiling Load	300	-300	0	0
Ventilation Load	0	0	1,714	10
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-168	-168	-1
Sup. Fan Heat			86	1
Ret. Fan Heat		87	87	1
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	13,868	1,212	16,880	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	9,590	69
Glass/Door Cond	490	4
Wall Cond	636	5
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	21	0
Sub Total ==>	10,736	78
Internal Loads		
Lights	1,278	9
People	0	0
Misc	1,498	11
Sub Total ==>	2,776	20
Ceiling Load	301	2
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
***Grand Total* ==>**	13,813	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-2,160	10.97
Glass Solar	0	0	0.00
Glass/Door Cond	-7,168	-7,168	36.40
Wall Cond	-1,502	-2,649	13.45
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-335	-335	1.70
Sub Total ==>	-9,005	-12,312	62.52
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-620	0	0.00
Ventilation Load	0	-6,180	31.39
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	-174	-174	0.88
Exhaust Heat		269	-1.37
OA Preheat Diff.		-1,100	5.59
RA Preheat Diff.		-194	0.99
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-9,800	-19,692	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	85.3
Ra Plenum	76.6	66.7
Return	76.7	66.7
Ret/OA	77.1	59.2
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	729	729
Terminal	729	729
Main Fan	729	729
Sec Fan	0	0
Nom Vent	85	70
AHU Vent	85	70
Infil	4	4
MinStop/Rh	0	0
Return	733	733
Exhaust	89	73
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	11.6	9.6
cfm/ft²	1.25	1.25
cfm/ton	450.49	
ft²/ton	361.71	
Btu/hr·ft²	33.18	-37.77
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	1.6	19.4	17.9	729	77.1	61.3	57.0	55.0	51.8	53.4
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.6	19.4								

AREAS

	Gross Total ft²	Glass ft²	Glass (%)
Floor	585		
Part	2,307		
Int Door	0		
ExFlr	0		
Roof	584	0	0
Wall	516	0	0
Ext Door	124	124	100

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-22.1	729	57.6	85.3
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-22.1			

System Checksums

By PB

System - 020 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 19
Outside Air: OADB/WB/HR: 77 / 64 / 69

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	85	85	3
Glass Solar	1,878	0	1,878	73
Glass/Door Cond	78	0	78	3
Wall Cond	57	80	137	5
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	5		5	0
Sub Total ==>	2,018	165	2,184	84
Internal Loads				
Lights	87	22	109	4
People	0	0	0	0
Misc	163	0	163	6
Sub Total ==>	250	22	271	10
Ceiling Load	25	-25	0	0
Ventilation Load	0	0	120	5
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-14	-14	-1
Sup. Fan Heat			14	1
Ret. Fan Heat		14	14	1
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	2,293	163	2,590	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	1,878	82
Glass/Door Cond	78	3
Wall Cond	57	2
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	1	0
Sub Total ==>	2,014	88
Internal Loads		
Lights	87	4
People	0	0
Misc	163	7
Sub Total ==>	250	11
Ceiling Load	25	1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
***Grand Total* ==>**	2,288	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-250	8.96
Glass Solar	0	0	0.00
Glass/Door Cond	-1,476	-1,476	52.86
Wall Cond	-99	-238	8.51
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-36	-36	1.30
Sub Total ==>	-1,611	-2,000	71.64
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-51	0	0.00
Ventilation Load	0	-672	24.07
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		22	-0.80
OA Preheat Diff.		-120	4.28
RA Preheat Diff.		-23	0.81
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-1,663	-2,792	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	85.7
Ra Plenum	76.2	67.5
Return	76.3	67.5
Ret/OA	76.4	62.5
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	121	121
Terminal	121	121
Main Fan	121	121
Sec Fan	0	0
Nom Vent	9	8
AHU Vent	9	8
Infil	0	0
MinStop/Rh	0	0
Return	121	121
Exhaust	10	8
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	7.6	6.3
cfm/ft²	1.90	1.90
cfm/ton	486.48	
ft²/ton	256.35	
Btu/hr·ft²	46.81	-50.42
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.3	3.0	2.9	121	76.4	60.4	54.2	55.0	51.5	52.3
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.3	3.0								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	64		
Part	762		
Int Door	0		
ExFlr	0		
Roof	67	0	0
Wall	56	9	17
Ext Door	21	21	100

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-3.2	121	61.5	85.7
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-3.2			

System Checksums

By PB

System - 021 **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 10
Outside Air: OADB/WB/HR: 73 / 60 / 59

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	130	130	2
Glass Solar	6,573	0	6,573	88
Glass/Door Cond	-217	0	-217	-3
Wall Cond	105	143	248	3
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	4		4	0
Sub Total ==>	6,465	272	6,738	90
Internal Loads				
Lights	180	45	224	3
People	0	0	0	0
Misc	337	0	337	5
Sub Total ==>	516	45	561	8
Ceiling Load	29	-29	0	0
Ventilation Load	0	0	98	1
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-18	-18	0
Sup. Fan Heat			44	1
Ret. Fan Heat		44	44	1
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	7,011	315	7,467	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	6,891	97
Glass/Door Cond	-393	-6
Wall Cond	53	1
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	-4	0
Sub Total ==>	6,546	92
Internal Loads		
Lights	180	3
People	0	0
Misc	337	5
Sub Total ==>	516	7
Ceiling Load	15	0
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
***Grand Total* ==>**	7,078	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-519	6.31
Glass Solar	0	0	0.00
Glass/Door Cond	-4,962	-4,962	60.39
Wall Cond	-432	-1,021	12.42
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-75	-75	0.92
Sub Total ==>	-5,469	-6,577	80.05
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-102	0	0.00
Ventilation Load	0	-1,389	16.91
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		44	-0.54
OA Preheat Diff.		-247	3.01
RA Preheat Diff.		-47	0.57
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-5,571	-8,216	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.1	87.0
Ra Plenum	75.7	67.6
Return	75.8	67.6
Ret/OA	75.7	64.3
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	373	373
Terminal	373	373
Main Fan	373	373
Sec Fan	0	0
Nom Vent	19	16
AHU Vent	19	16
Infil	1	1
MinStop/Rh	0	0
Return	374	374
Exhaust	20	17
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	5.1	4.2
cfm/ft²	2.84	2.84
cfm/ton	521.82	
ft²/ton	183.82	
Btu/hr·ft²	65.28	-73.05
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB/WB/HR °F	Enter DB/WB/HR °F	Enter DB/WB/HR gr/lb	Leave DB/WB/HR °F	Leave DB/WB/HR °F	Leave DB/WB/HR gr/lb
Main Clg	0.7	8.6	8.4	373	75.7	58.9	49.0	55.0	50.5	48.3
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.7	8.6								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	132		
Part	0		
Int Door	0		
ExFlr	0		
Roof	139	0	0
Wall	279	80	29
Ext Door	47	47	100

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-9.6	373	63.5	87.0
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-9.6			

System Checksums

By PB

CUHs - Vestibules **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 11
Outside Air: OADB/WB/HR: 76 / 63 / 66

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	117	117	2
Glass Solar	4,738	0	4,738	80
Glass/Door Cond	-29	0	-29	0
Wall Cond	39	53	92	2
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	6		6	0
Sub Total ==>	4,754	169	4,924	83
Internal Loads				
Lights	246	61	307	5
People	0	0	0	0
Misc	668	0	668	11
Sub Total ==>	913	61	975	16
Ceiling Load	49	-49	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		0	0	0
Sup. Fan Heat			31	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	5,717	181	5,929	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	4,738	83
Glass/Door Cond	-29	-1
Wall Cond	39	1
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	1	0
Sub Total ==>	4,749	83
Internal Loads		
Lights	246	4
People	0	0
Misc	668	12
Sub Total ==>	913	16
Ceiling Load	49	1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
***Grand Total* ==>**	5,712	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-326	5.30
Glass Solar	0	0	0.00
Glass/Door Cond	-5,143	-5,143	83.45
Wall Cond	-279	-661	10.73
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-33	-33	0.54
Sub Total ==>	-5,456	-6,164	100.01
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-159	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		1	-0.01
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-5,614	-6,163	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	89.7
Ra Plenum	75.6	68.1
Return	75.5	68.1
Ret/OA	75.5	68.1
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	261	261
Terminal	261	261
Main Fan	261	261
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	0	0
Return	261	261
Exhaust	0	0
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	1.00	1.00
cfm/ton	527.47	
ft²/ton	527.91	
Btu/hr·ft²	22.73	-23.63
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.5	5.9	5.9	261	75.5	57.8	44.4	54.9	49.2	44.0
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.5	5.9								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	261		
Part	1,518		
Int Door	0		
ExFlr	0		
Roof	275	0	0
Wall	394	99	25
Ext Door	89	89	100

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-6.2	261	68.1	89.7
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-6.2			

System Checksums

By PB

DUMMY **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 5 / 1
Outside Air: OADB/WB/HR: 59 / 46 / 27

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	-10	-10	-4
Glass Solar	224	0	224	84
Glass/Door Cond	-76	0	-76	-29
Wall Cond	92	39	131	49
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	-3		-3	-1
Sub Total ==>	237	29	266	100
Internal Loads				
Lights	0	0	0	0
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	0	0	0	0
Ceiling Load	12	-12	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		0	0	0
Sup. Fan Heat			0	0
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	249	17	266	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	224	83
Glass/Door Cond	-76	-28
Wall Cond	92	34
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	-1	0
Sub Total ==>	239	89
Internal Loads		
Lights	0	0
People	0	0
Misc	0	0
Sub Total ==>	0	0
Ceiling Load	30	11
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
***Grand Total* ==>**	269	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-22	1.31
Glass Solar	0	0	0.00
Glass/Door Cond	-515	-515	30.42
Wall Cond	-855	-1,154	68.18
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-3	-3	0.19
Sub Total ==>	-1,373	-1,694	100.09
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-319	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		2	-0.09
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-1,692	-1,692	100.00

TEMPERATURES

	Cooling	Heating
SADB	80.0	55.0
Ra Plenum	81.2	22.1
Return	81.2	22.1
Ret/OA	81.2	22.1
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.0	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	0	0
Terminal	0	0
Main Fan	0	0
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	0	0
Return	0	0
Exhaust	0	0
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	0.00	0.00
cfm/ton	0.00	
ft²/ton	0.00	
Btu/hr·ft²	0.00	0.00
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.0	0.0	0.0	0	0.0	0.0	77.7	0.0	0.0	77.7
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	0.0								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	31		
Part	2,072		
Int Door	0		
ExFlr	0		
Roof	31	0	0
Wall	621	23	4
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	0.0	0	0.0	0.0
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	22.1	80.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	0.0			

System Checksums

By PB

FCU - Elec — **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	86	86	0
Glass Solar	76	0	76	0
Glass/Door Cond	58	0	58	0
Wall Cond	12	8	20	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	2		2	0
Sub Total ==>	148	94	242	1
Internal Loads				
Lights	349	87	437	1
People	0	0	0	0
Misc	341	0	341	1
Sub Total ==>	691	87	778	2
Ceiling Load	29	-29	0	0
Ventilation Load	0	0	53,638	114
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-7,451	-7,451	-16
Sup. Fan Heat			24	0
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	868	-7,299	47,230	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	75	9
Glass/Door Cond	65	7
Wall Cond	15	2
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	2	0
Sub Total ==>	157	18
Lights	349	40
People	0	0
Misc	341	39
Sub Total ==>	691	79
Ceiling Load	29	3
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	877	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-169	0.90
Glass Solar	0	0	0.00
Glass/Door Cond	-799	-799	4.27
Wall Cond	-134	-239	1.27
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-17	-17	0.09
Sub Total ==>	-950	-1,223	6.53
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-44	0	0.00
Ventilation Load	0	-17,737	94.69
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		229	-1.22
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-994	-18,732	100.00

TEMPERATURES

	Cooling	Heating
SADB	71.0	74.5
Ra Plenum	75.7	69.0
Return	75.7	69.0
Ret/OA	83.7	-11.0
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	200	200
Terminal	200	200
Main Fan	200	200
Sec Fan	0	0
Nom Vent	4,996	200
AHU Vent	4,996	200
Infil	0	0
MinStop/Rh	0	0
Return	4,996	200
Exhaust	9,792	200
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	100.0	100.0
cfm/ft²	1.50	1.50
cfm/ton	50.77	
ft²/ton	33.85	
Btu/hr·ft²	354.52	-3,294.76
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	3.9	47.2	41.2	200	83.7	69.1	85.3	70.9	0.0	0.0
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	3.9	47.2								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	133		
Part	1,006		
Int Door	0		
ExFlr	0		
Roof	140	0	0
Wall	106	0	0
Ext Door	24	24	100

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-438.9	200	0.0	74.5
Aux Htg	0.0	0	0.0	0.0
Preheat	-17.9	200	-11.0	70.9
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-438.9			

System Checksums

By PB

FCU - Evid Dep — **Fan Coil**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	401	401	9
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	101	49	150	3
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	16		16	0
Sub Total ==>	118	450	568	13
Internal Loads				
Lights	1,160	290	1,450	32
People	0	0	0	0
Misc	1,273	0	1,273	28
Sub Total ==>	2,433	290	2,723	60
Ceiling Load	338	-338	0	0
Ventilation Load	0	0	1,366	30
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-142	-142	-3
Sup. Fan Heat			20	0
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	2,889	261	4,535	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	168	6
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	5	0
Sub Total ==>	173	6
Internal Loads		
Lights	1,160	40
People	0	0
Misc	1,273	44
Sub Total ==>	2,433	83
Ceiling Load	309	11
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
***Grand Total* ==>**	2,916	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-618	9.39
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	-500	-769	11.69
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-63	-63	0.96
Sub Total ==>	-563	-1,450	22.04
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-405	0	0.00
Ventilation Load	0	-5,298	80.55
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		170	-2.58
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-967	-6,578	100.00

TEMPERATURES

	Cooling	Heating
SADB	59.4	75.2
Ra Plenum	77.1	67.4
Return	77.1	67.4
Ret/OA	79.4	40.0
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	171	171
Terminal	171	171
Main Fan	171	171
Sec Fan	0	0
Nom Vent	60	60
AHU Vent	60	60
Infil	1	1
MinStop/Rh	0	0
Return	171	171
Exhaust	60	60
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	35.0	35.0
cfm/ft²	0.34	0.34
cfm/ton	451.69	
ft²/ton	1,316.20	
Btu/hr·ft²	9.12	-13.22
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.4	4.5	3.7	171	79.5	65.4	72.7	59.4	56.8	66.3
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.4	4.5								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	497		
Part	1,964		
Int Door	0		
ExFlr	0		
Roof	524	0	0
Wall	343	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-6.6	171	40.0	75.2
Aux Htg	0.0	0	0.0	0.0
Preheat	-3.6	171	40.0	59.3
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-6.6			

System Checksums

By PB

FCU - Mech — **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	290	290	3
Glass Solar	143	0	143	2
Glass/Door Cond	121	0	121	1
Wall Cond	48	28	76	1
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	7		7	0
Sub Total ==>	319	318	637	7
Internal Loads				
Lights	1,048	262	1,311	15
People	0	0	0	0
Misc	1,130	0	1,130	13
Sub Total ==>	2,178	262	2,441	27
Ceiling Load	141	-141	0	0
Ventilation Load	0	0	6,630	75
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-878	-878	-10
Sup. Fan Heat			47	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	2,638	-439	8,877	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	138	5
Glass/Door Cond	131	5
Wall Cond	61	2
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	6	0
Sub Total ==>	336	13
Internal Loads		
Lights	1,048	40
People	0	0
Misc	1,130	43
Sub Total ==>	2,178	82
Ceiling Load	139	5
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	2,653	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-555	1.48
Glass Solar	0	0	0.00
Glass/Door Cond	-1,484	-1,484	3.96
Wall Cond	-495	-821	2.19
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-56	-56	0.15
Sub Total ==>	-2,035	-2,916	7.77
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-214	0	0.00
Ventilation Load	0	-35,263	94.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		667	-1.78
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,249	-37,512	100.00

TEMPERATURES

	Cooling	Heating
SADB	68.9	75.2
Ra Plenum	76.0	68.5
Return	76.0	68.5
Ret/OA	83.7	-11.0
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	397	397
Terminal	397	397
Main Fan	397	397
Sec Fan	0	0
Nom Vent	596	397
AHU Vent	596	397
Infil	1	1
MinStop/Rh	0	0
Return	597	398
Exhaust	795	398
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	100.0	100.0
cfm/ft²	0.90	0.90
cfm/ton	537.06	
ft²/ton	596.73	
Btu/hr·ft²	20.11	-124.16
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.7	8.9	7.9	397	83.7	69.1	85.3	68.8	62.6	76.8
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.7	8.9								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	441		
Part	1,564		
Int Door	0		
ExFlr	0		
Roof	465	0	0
Wall	365	0	0
Ext Door	45	45	100

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-54.8	397	-50.7	75.2
Aux Htg	0.0	0	0.0	0.0
Preheat	-34.7	397	-11.0	68.8
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-54.8			

System Checksums

By PB

FCU - TR **Fan Coil**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	91	91	11
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	5		5	1
Sub Total ==>	5	91	95	11
Internal Loads				
Lights	161	40	201	24
People	0	0	0	0
Misc	368	0	368	43
Sub Total ==>	529	40	569	67
Ceiling Load	67	-67	0	0
Ventilation Load	0	0	198	23
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-14	-14	-2
Sup. Fan Heat			1	0
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	601	50	849	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	2	0
Sub Total ==>	2	0
Internal Loads		
Lights	161	27
People	0	0
Misc	368	61
Sub Total ==>	529	88
Ceiling Load	68	11
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	598	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-180	19.04
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-18	-18	1.93
Sub Total ==>	-18	-198	20.97
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-92	0	0.00
Ventilation Load	0	-765	81.11
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		20	-2.07
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-110	-944	100.00

TEMPERATURES

	Cooling	Heating
SADB	61.1	72.6
Ra Plenum	76.5	68.0
Return	76.5	68.0
Ret/OA	78.1	50.6
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.0	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	39	39
Terminal	39	39
Main Fan	39	39
Sec Fan	0	0
Nom Vent	9	9
AHU Vent	9	9
Infil	0	0
MinStop/Rh	0	0
Return	39	39
Exhaust	9	9
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	22.0	22.0
cfm/ft²	0.27	0.27
cfm/ton	555.11	
ft²/ton	2,031.25	
Btu/hr·ft²	5.91	-6.57
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.1	0.9	0.7	39	78.1	64.4	70.1	61.1	57.4	65.8
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	0.9								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	144		
Part	1,318		
Int Door	0		
ExFlr	0		
Roof	151	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-0.9	39	50.6	72.6
Aux Htg	0.0	0	0.0	0.0
Preheat	-0.5	39	50.6	61.1
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-0.9			

System Checksums

By PB

Primary - VAV w/ BB

VAV w/Baseboard Skin Heating

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	3,979	3,979	5
Glass Solar	7,892	0	7,892	10
Glass/Door Cond	991	0	991	1
Wall Cond	688	461	1,149	1
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	184		184	0
Sub Total ==>	9,755	4,440	14,195	17
Internal Loads				
Lights	9,021	2,255	11,276	14
People	21,100	0	21,100	26
Misc	14,784	0	14,784	18
Sub Total ==>	44,905	2,255	47,160	58
Ceiling Load	2,807	-2,807	0	0
Ventilation Load	0	0	19,819	24
Adj Air Trans Heat	204		204	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-1,637	-1,637	-2
Sup. Fan Heat			924	1
Ret. Fan Heat		683	683	1
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	57,670	2,935	81,349	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 17
OADB: 82

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	8,715	18
Glass/Door Cond	1,063	2
Wall Cond	908	2
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	61	0
Sub Total ==>	10,748	22
Internal Loads		
Lights	9,021	18
People	11,722	24
Misc	14,784	30
Sub Total ==>	35,527	72
Ceiling Load	2,532	5
Ventilation Load	0	0
Adj Air Trans Heat	204	0
Ov/Undr Sizing	0	0
Exhaust Heat		
OA Preheat Diff.		
RA Preheat Diff.		
Additional Reheat		
Underflr Sup Ht Pkup		
Supply Air Leakage		
Grand Total ==>	49,011	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-7,027	9.49
Glass Solar	0	0	0.00
Glass/Door Cond	-12,534	-12,534	16.93
Wall Cond	-3,486	-5,926	8.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-731	-731	0.99
Sub Total ==>	-16,750	-26,217	35.41
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-5,924	0	0.00
Ventilation Load	0	-49,751	67.19
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		1,921	-2.59
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-22,675	-74,047	100.00

TEMPERATURES

	Cooling	Heating
SADB	56.4	0.0
Ra Plenum	76.5	0.0
Return	76.8	0.0
Ret/OA	79.4	0.0
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	2,403	1,040
Terminal	2,403	1,040
Main Fan	2,403	1,040
Sec Fan	0	0
Nom Vent	885	561
AHU Vent	885	561
Infil	8	8
MinStop/Rh	1,040	1,040
Return	2,346	1,048
Exhaust	828	0
Rm Exh	65	1
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	36.8	53.9
cfm/ft²	0.42	0.18
cfm/ton	354.49	
ft²/ton	851.99	
Btu/hr·ft²	14.08	-14.01
No. People	47	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	6.8	81.4	60.5	2,363	79.4	65.5	73.6	56.0	54.2	61.0
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	6.8	81.4								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	5,776		
Part	37,342		
Int Door	0		
ExFlr	0		
Roof	6,019	0	0
Wall	3,034	371	12
Ext Door	124	124	100

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	0.0	0	0.0	0.0
Aux Htg	-22.7	0	0.0	0.0
Preheat	-65.0	885	-11.0	56.0
Reheat	-15.9	1,040	56.0	70.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-103.6			

System Checksums

By PB

Secondary - VAV w/ BB

VAV w/Baseboard Skin Heating

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	1,555	1,555	5
Glass Solar	1,614	0	1,614	6
Glass/Door Cond	110	0	110	0
Wall Cond	174	105	279	1
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	66		66	0
Sub Total ==>	1,964	1,660	3,624	12
Internal Loads				
Lights	4,099	1,025	5,124	18
People	7,711	0	7,711	27
Misc	5,197	0	5,197	18
Sub Total ==>	17,007	1,025	18,031	62
Ceiling Load	1,120	-1,120	0	0
Ventilation Load	0	0	7,370	25
Adj Air Trans Heat	129		129	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-654	-654	-2
Sup. Fan Heat			271	1
Ret. Fan Heat		243	243	1
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	20,219	1,153	29,013	100.00

CLG SPACE PEAK

Mo/Hr: 9 / 15
OADB: 78

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	2,597	15
Glass/Door Cond	-1	0
Wall Cond	215	1
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	9	0
Sub Total ==>	2,819	16
Internal Loads		
Lights	4,099	23
People	4,284	25
Misc	5,197	30
Sub Total ==>	13,580	78
Ceiling Load	929	5
Ventilation Load	0	0
Adj Air Trans Heat	129	1
Ov/Undr Sizing	0	0
***Grand Total* ==>**	17,456	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-2,509	10.85
Glass Solar	0	0	0.00
Glass/Door Cond	-1,580	-1,580	6.83
Wall Cond	-783	-1,281	5.54
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-257	-257	1.11
Sub Total ==>	-2,619	-5,626	24.32
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-1,891	0	0.00
Ventilation Load	0	-18,136	78.41
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		631	-2.73
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-4,511	-23,131	100.00

TEMPERATURES

	Cooling	Heating
SADB	56.9	0.0
Ra Plenum	76.7	0.0
Return	77.0	0.0
Ret/OA	79.6	0.0
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	881	363
Terminal	881	363
Main Fan	881	363
Sec Fan	0	0
Nom Vent	323	204
AHU Vent	323	204
Infil	3	3
MinStop/Rh	363	363
Return	855	366
Exhaust	297	0
Rm Exh	29	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	36.7	56.2
cfm/ft²	0.43	0.18
cfm/ton	364.39	
ft²/ton	839.75	
Btu/hr·ft²	14.29	-14.42
No. People	17	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	2.4	29.0	21.3	846	79.6	65.5	73.4	56.6	54.3	60.3
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	2.4	29.0								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	2,030		
Part	18,196		
Int Door	0		
ExFlr	0		
Roof	2,140	0	0
Wall	644	69	11
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	0.0	0	0.0	0.0
Aux Htg	-4.5	0	0.0	0.0
Preheat	-24.0	323	-11.0	56.6
Reheat	-5.3	363	56.6	70.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-33.8			

System Checksums

By PB

CUHs - Vestibules **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 11
Outside Air: OADB/WB/HR: 76 / 63 / 66

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	117	117	2
Glass Solar	4,738	0	4,738	80
Glass/Door Cond	-29	0	-29	0
Wall Cond	39	53	92	2
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	6		6	0
Sub Total ==>	4,754	169	4,924	83
Internal Loads				
Lights	246	61	307	5
People	0	0	0	0
Misc	668	0	668	11
Sub Total ==>	913	61	975	16
Ceiling Load	49	-49	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		0	0	0
Sup. Fan Heat			31	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	5,717	181	5,929	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	4,738	83
Glass/Door Cond	-29	-1
Wall Cond	39	1
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	1	0
Sub Total ==>	4,749	83
Internal Loads		
Lights	246	4
People	0	0
Misc	668	12
Sub Total ==>	913	16
Ceiling Load	49	1
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	5,712	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-326	5.30
Glass Solar	0	0	0.00
Glass/Door Cond	-5,143	-5,143	83.45
Wall Cond	-279	-661	10.73
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-33	-33	0.54
Sub Total ==>	-5,456	-6,164	100.01
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-159	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		1	-0.01
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-5,614	-6,163	100.00

TEMPERATURES

	Cooling	Heating
SADB	55.0	89.7
Ra Plenum	75.6	68.1
Return	75.5	68.1
Ret/OA	75.5	68.1
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	261	261
Terminal	261	261
Main Fan	261	261
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	0	0
Return	261	261
Exhaust	0	0
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	1.00	1.00
cfm/ton	527.47	
ft²/ton	527.91	
Btu/hr·ft²	22.73	-23.63
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.5	5.9	5.9	261	75.5	57.8	44.4	54.9	49.2	44.0
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.5	5.9								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	261		
Part	1,518		
Int Door	0		
ExFlr	0		
Roof	275	0	0
Wall	394	99	25
Ext Door	89	89	100

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-6.2	261	68.1	89.7
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-6.2			

System Checksums

By PB

DUMMY **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 5 / 1
Outside Air: OADB/WB/HR: 59 / 46 / 27

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	-10	-10	-4
Glass Solar	224	0	224	84
Glass/Door Cond	-76	0	-76	-29
Wall Cond	92	39	131	49
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	-3		-3	-1
Sub Total ==>	237	29	266	100
Internal Loads				
Lights	0	0	0	0
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	0	0	0	0
Ceiling Load	12	-12	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		0	0	0
Sup. Fan Heat			0	0
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	249	17	266	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	224	83
Glass/Door Cond	-76	-28
Wall Cond	92	34
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	-1	0
Sub Total ==>	239	89
Internal Loads		
Lights	0	0
People	0	0
Misc	0	0
Sub Total ==>	0	0
Ceiling Load	30	11
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
***Grand Total* ==>**	269	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-22	1.31
Glass Solar	0	0	0.00
Glass/Door Cond	-515	-515	30.42
Wall Cond	-855	-1,154	68.18
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-3	-3	0.19
Sub Total ==>	-1,373	-1,694	100.09
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-319	0	0.00
Ventilation Load	0	0	0.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		2	-0.09
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-1,692	-1,692	100.00

TEMPERATURES

	Cooling	Heating
SADB	80.0	55.0
Ra Plenum	81.2	22.1
Return	81.2	22.1
Ret/OA	81.2	22.1
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.0	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	0	0
Terminal	0	0
Main Fan	0	0
Sec Fan	0	0
Nom Vent	0	0
AHU Vent	0	0
Infil	0	0
MinStop/Rh	0	0
Return	0	0
Exhaust	0	0
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	0.0
cfm/ft²	0.00	0.00
cfm/ton	0.00	
ft²/ton	0.00	
Btu/hr·ft²	0.00	0.00
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.0	0.0	0.0	0	0.0	0.0	77.7	0.0	0.0	77.7
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	0.0								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	31		
Part	2,072		
Int Door	0		
ExFlr	0		
Roof	31	0	0
Wall	621	23	4
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	0.0	0	0.0	0.0
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	22.1	80.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	0.0			

System Checksums

By PB

FCU - Elec — **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	86	86	0
Glass Solar	76	0	76	0
Glass/Door Cond	58	0	58	0
Wall Cond	12	8	20	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	2		2	0
Sub Total ==>	148	94	242	1
Internal Loads				
Lights	349	87	437	1
People	0	0	0	0
Misc	341	0	341	1
Sub Total ==>	691	87	778	2
Ceiling Load	29	-29	0	0
Ventilation Load	0	0	53,638	114
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-7,451	-7,451	-16
Sup. Fan Heat			24	0
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	868	-7,299	47,230	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	75	9
Glass/Door Cond	65	7
Wall Cond	15	2
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	2	0
Sub Total ==>	157	18
Lights	349	40
People	0	0
Misc	341	39
Sub Total ==>	691	79
Ceiling Load	29	3
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
***Grand Total* ==>**	877	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-169	0.90
Glass Solar	0	0	0.00
Glass/Door Cond	-799	-799	4.27
Wall Cond	-134	-239	1.27
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-17	-17	0.09
Sub Total ==>	-950	-1,223	6.53
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-44	0	0.00
Ventilation Load	0	-17,737	94.69
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		229	-1.22
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-994	-18,732	100.00

TEMPERATURES

	Cooling	Heating
SADB	71.0	74.5
Ra Plenum	75.7	69.0
Return	75.7	69.0
Ret/OA	83.7	-11.0
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	200	200
Terminal	200	200
Main Fan	200	200
Sec Fan	0	0
Nom Vent	4,996	200
AHU Vent	4,996	200
Infil	0	0
MinStop/Rh	0	0
Return	4,996	200
Exhaust	9,792	200
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	100.0	100.0
cfm/ft²	1.50	1.50
cfm/ton	50.77	
ft²/ton	33.85	
Btu/hr·ft²	354.52	-3,294.76
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	3.9	47.2	41.2	200	83.7	69.1	85.3	70.9	0.0	0.0
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	3.9	47.2								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	133		
Part	1,006		
Int Door	0		
ExFlr	0		
Roof	140	0	0
Wall	106	0	0
Ext Door	24	24	100

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-438.9	200	0.0	74.5
Aux Htg	0.0	0	0.0	0.0
Preheat	-17.9	200	-11.0	70.9
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-438.9			

System Checksums

By PB

FCU - Evid Dep — **Fan Coil**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	401	401	9
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	101	49	150	3
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	16		16	0
Sub Total ==>	118	450	568	13
Internal Loads				
Lights	1,160	290	1,450	32
People	0	0	0	0
Misc	1,273	0	1,273	28
Sub Total ==>	2,433	290	2,723	60
Ceiling Load	338	-338	0	0
Ventilation Load	0	0	1,366	30
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-142	-142	-3
Sup. Fan Heat			20	0
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	2,889	261	4,535	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	168	6
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	5	0
Sub Total ==>	173	6
Internal Loads		
Lights	1,160	40
People	0	0
Misc	1,273	44
Sub Total ==>	2,433	83
Ceiling Load	309	11
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
***Grand Total* ==>**	2,916	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-618	9.39
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	-500	-769	11.69
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-63	-63	0.96
Sub Total ==>	-563	-1,450	22.04
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-405	0	0.00
Ventilation Load	0	-5,298	80.55
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		170	-2.58
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-967	-6,578	100.00

TEMPERATURES

	Cooling	Heating
SADB	59.4	75.2
Ra Plenum	77.1	67.4
Return	77.1	67.4
Ret/OA	79.4	40.0
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	171	171
Terminal	171	171
Main Fan	171	171
Sec Fan	0	0
Nom Vent	60	60
AHU Vent	60	60
Infil	1	1
MinStop/Rh	0	0
Return	171	171
Exhaust	60	60
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	35.0	35.0
cfm/ft²	0.34	0.34
cfm/ton	451.69	
ft²/ton	1,316.20	
Btu/hr·ft²	9.12	-13.22
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.4	4.5	3.7	171	79.5	65.4	72.7	59.4	56.8	66.3
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.4	4.5								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	497		
Part	1,964		
Int Door	0		
ExFlr	0		
Roof	524	0	0
Wall	343	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-6.6	171	40.0	75.2
Aux Htg	0.0	0	0.0	0.0
Preheat	-3.6	171	40.0	59.3
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-6.6			

System Checksums

By PB

FCU - Mech — **Single Zone**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	290	290	3
Glass Solar	143	0	143	2
Glass/Door Cond	121	0	121	1
Wall Cond	48	28	76	1
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	7		7	0
Sub Total ==>	319	318	637	7
Internal Loads				
Lights	1,048	262	1,311	15
People	0	0	0	0
Misc	1,130	0	1,130	13
Sub Total ==>	2,178	262	2,441	27
Ceiling Load	141	-141	0	0
Ventilation Load	0	0	6,630	75
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-878	-878	-10
Sup. Fan Heat			47	1
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	2,638	-439	8,877	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	138	5
Glass/Door Cond	131	5
Wall Cond	61	2
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	6	0
Sub Total ==>	336	13
Internal Loads		
Lights	1,048	40
People	0	0
Misc	1,130	43
Sub Total ==>	2,178	82
Ceiling Load	139	5
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	2,653	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-555	1.48
Glass Solar	0	0	0.00
Glass/Door Cond	-1,484	-1,484	3.96
Wall Cond	-495	-821	2.19
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-56	-56	0.15
Sub Total ==>	-2,035	-2,916	7.77
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-214	0	0.00
Ventilation Load	0	-35,263	94.00
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		667	-1.78
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-2,249	-37,512	100.00

TEMPERATURES

	Cooling	Heating
SADB	68.9	75.2
Ra Plenum	76.0	68.5
Return	76.0	68.5
Ret/OA	83.7	-11.0
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.1	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	397	397
Terminal	397	397
Main Fan	397	397
Sec Fan	0	0
Nom Vent	596	397
AHU Vent	596	397
Infil	1	1
MinStop/Rh	0	0
Return	597	398
Exhaust	795	398
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	100.0	100.0
cfm/ft²	0.90	0.90
cfm/ton	537.06	
ft²/ton	596.73	
Btu/hr·ft²	20.11	-124.16
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.7	8.9	7.9	397	83.7	69.1	85.3	68.8	62.6	76.8
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.7	8.9								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	441		
Part	1,564		
Int Door	0		
ExFlr	0		
Roof	465	0	0
Wall	365	0	0
Ext Door	45	45	100

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-54.8	397	-50.7	75.2
Aux Htg	0.0	0	0.0	0.0
Preheat	-34.7	397	-11.0	68.8
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-54.8			

System Checksums

By PB

FCU - TR **Fan Coil**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	91	91	11
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	5		5	1
Sub Total ==>	5	91	95	11
Internal Loads				
Lights	161	40	201	24
People	0	0	0	0
Misc	368	0	368	43
Sub Total ==>	529	40	569	67
Ceiling Load	67	-67	0	0
Ventilation Load	0	0	198	23
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-14	-14	-2
Sup. Fan Heat			1	0
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	601	50	849	100.00

CLG SPACE PEAK

Mo/Hr: Sum of
OADB: Peaks

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	2	0
Sub Total ==>	2	0
Internal Loads		
Lights	161	27
People	0	0
Misc	368	61
Sub Total ==>	529	88
Ceiling Load	68	11
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
***Grand Total* ==>**	598	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-180	19.04
Glass Solar	0	0	0.00
Glass/Door Cond	0	0	0.00
Wall Cond	0	0	0.00
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-18	-18	1.93
Sub Total ==>	-18	-198	20.97
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-92	0	0.00
Ventilation Load	0	-765	81.11
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		20	-2.07
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-110	-944	100.00

TEMPERATURES

	Cooling	Heating
SADB	61.1	72.6
Ra Plenum	76.5	68.0
Return	76.5	68.0
Ret/OA	78.1	50.6
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.0	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	39	39
Terminal	39	39
Main Fan	39	39
Sec Fan	0	0
Nom Vent	9	9
AHU Vent	9	9
Infil	0	0
MinStop/Rh	0	0
Return	39	39
Exhaust	9	9
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	22.0	22.0
cfm/ft²	0.27	0.27
cfm/ton	555.11	
ft²/ton	2,031.25	
Btu/hr·ft²	5.91	-6.57
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.1	0.9	0.7	39	78.1	64.4	70.1	61.1	57.4	65.8
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.1	0.9								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	144		
Part	1,318		
Int Door	0		
ExFlr	0		
Roof	151	0	0
Wall	0	0	0
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-0.9	39	50.6	72.6
Aux Htg	0.0	0	0.0	0.0
Preheat	-0.5	39	50.6	61.1
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-0.9			

System Checksums

By PB

Primary - FPTU w/ Reheat

Parallel Fan-Powered VAV, Htg Coil on Plenum Inlet

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	3,979	3,979	5
Glass Solar	7,892	0	7,892	10
Glass/Door Cond	991	0	991	1
Wall Cond	688	461	1,149	1
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	184		184	0
Sub Total ==>	9,755	4,440	14,195	17
Internal Loads				
Lights	9,021	2,255	11,276	14
People	21,100	0	21,100	26
Misc	14,784	0	14,784	18
Sub Total ==>	44,905	2,255	47,160	58
Ceiling Load	2,807	-2,807	0	0
Ventilation Load	0	0	19,819	24
Adj Air Trans Heat	204		204	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-1,637	-1,637	-2
Sup. Fan Heat			924	1
Ret. Fan Heat		683	683	1
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
***Grand Total* ==>**	57,670	2,935	81,349	100.00

CLG SPACE PEAK

Mo/Hr: 7 / 17
OADB: 82

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	8,715	18
Glass/Door Cond	1,063	2
Wall Cond	908	2
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	61	0
Sub Total ==>	10,748	22
Internal Loads		
Lights	9,021	18
People	11,722	24
Misc	14,784	30
Sub Total ==>	35,527	72
Ceiling Load	2,532	5
Ventilation Load	0	0
Adj Air Trans Heat	204	0
Ov/Undr Sizing	0	0
Exhaust Heat		
OA Preheat Diff.		
RA Preheat Diff.		
Additional Reheat		
Underflr Sup Ht Pkup		
Supply Air Leakage		
***Grand Total* ==>**	49,011	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-7,083	6.74
Glass Solar	0	0	0.00
Glass/Door Cond	-12,534	-12,534	11.93
Wall Cond	-3,486	-5,963	5.68
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-731	-731	0.70
Sub Total ==>	-16,750	-26,311	25.05
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-4,863	0	0.00
Ventilation Load	0	-78,565	74.80
Adj Air Trans Heat	-651	-651	1
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		2,420	-2.30
OA Preheat Diff.		0	0.00
RA Preheat Diff.		-1,922	1.83
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
***Grand Total* ==>**	-22,265	-105,030	100.00

TEMPERATURES

	Cooling	Heating
SADB	56.4	82.2
Ra Plenum	76.5	67.3
Return	76.8	67.3
Ret/OA	79.4	0.7
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.1

AIRFLOWS

	Cooling	Heating
Diffuser	2,403	1,667
Terminal	2,403	1,667
Main Fan	2,403	1,040
Sec Fan	0	627
Nom Vent	885	885
AHU Vent	885	885
Infil	8	8
MinStop/Rh	1,040	1,040
Return	2,346	986
Exhaust	828	831
Rm Exh	65	62
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	36.8	53.1
cfm/ft²	0.42	0.11
cfm/ton	354.49	
ft²/ton	851.99	
Btu/hr·ft²	14.08	-18.11
No. People	47	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	6.8	81.4	60.5	2,363	79.4	65.5	73.6	56.0	54.2	61.0
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	6.8	81.4								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	5,776		
Part	37,342		
Int Door	0		
ExFlr	0		
Roof	6,019	0	0
Wall	3,034	371	12
Ext Door	124	124	100

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-39.6	627	67.3	125.0
Aux Htg	0.0	0	0.0	0.0
Preheat	-65.0	885	-11.0	56.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-104.6			

System Checksums

By PB

Secondary - FPTU w/ Reheat

Parallel Fan-Powered VAV, Htg Coil on Plenum Inlet

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 7 / 15
Outside Air: OADB/WB/HR: 84 / 69 / 85

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	1,555	1,555	5
Glass Solar	1,614	0	1,614	6
Glass/Door Cond	110	0	110	0
Wall Cond	174	105	279	1
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	66		66	0
Sub Total ==>	1,964	1,660	3,624	12
Internal Loads				
Lights	4,099	1,025	5,124	18
People	7,711	0	7,711	27
Misc	5,197	0	5,197	18
Sub Total ==>	17,007	1,025	18,031	62
Ceiling Load	1,120	-1,120	0	0
Ventilation Load	0	0	7,370	25
Adj Air Trans Heat	129		129	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		-654	-654	-2
Sup. Fan Heat			271	1
Ret. Fan Heat		243	243	1
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	20,219	1,153	29,013	100.00

CLG SPACE PEAK

Mo/Hr: 9 / 15
OADB: 78

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	2,597	15
Glass/Door Cond	-1	0
Wall Cond	215	1
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	9	0
Sub Total ==>	2,819	16
Internal Loads		
Lights	4,099	23
People	4,284	25
Misc	5,197	30
Sub Total ==>	13,580	78
Ceiling Load	929	5
Ventilation Load	0	0
Adj Air Trans Heat	129	1
Ov/Undr Sizing	0	0
Grand Total ==>	17,456	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -11

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	0	-2,522	7.32
Glass Solar	0	0	0.00
Glass/Door Cond	-1,580	-1,580	4.58
Wall Cond	-783	-1,289	3.74
Partition/Door	0	0	0.00
Floor	0	0	0.00
Adjacent Floor	0	0	0
Infiltration	-257	-257	0.75
Sub Total ==>	-2,619	-5,647	16.39
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	-1,637	0	0.00
Ventilation Load	0	-28,700	83.28
Adj Air Trans Heat	-460	-460	1
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		820	-2.38
OA Preheat Diff.		0	0.00
RA Preheat Diff.		-475	1.38
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-4,717	-34,462	100.00

TEMPERATURES

	Cooling	Heating
SADB	56.9	78.2
Ra Plenum	76.7	67.5
Return	77.0	67.5
Ret/OA	79.6	-2.4
Fn MtrTD	0.0	0.0
Fn BldTD	0.1	0.0
Fn Frict	0.2	0.1

AIRFLOWS

	Cooling	Heating
Diffuser	881	528
Terminal	881	528
Main Fan	881	363
Sec Fan	0	165
Nom Vent	323	323
AHU Vent	323	323
Infil	3	3
MinStop/Rh	363	363
Return	855	334
Exhaust	297	294
Rm Exh	29	32
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	36.7	61.2
cfm/ft²	0.43	0.08
cfm/ton	364.39	
ft²/ton	839.75	
Btu/hr·ft²	14.29	-16.92
No. People	17	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	2.4	29.0	21.3	846	79.6	65.5	73.4	56.6	54.3	60.3
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	2.4	29.0								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	2,030		
Part	18,196		
Int Door	0		
ExFlr	0		
Roof	2,140	0	0
Wall	644	69	11
Ext Door	0	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-10.4	165	67.5	125.0
Aux Htg	0.0	0	0.0	0.0
Preheat	-24.0	323	-11.0	56.6
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-34.4			

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System Ventilation Requirements

AHU Location	Description		∑Vpz cfm	Ps People	∑ Pz People	D Ps / ∑Pz	Vou cfm	Vps cfm	Xs	Ev	Vot cfm	%OA Vot / Vps
Alternative 1												
Zone	PSZ-AC	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	System - 002	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	System - 003	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	System - 004	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	System - 005	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	System - 006	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	System - 007	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	System - 008	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	System - 009	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	System - 010	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	System - 011	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	System - 012	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	System - 013	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	System - 014	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0

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System Ventilation Requirements

AHU Location	Description		∑Vpz cfm	Ps People	∑ Pz People	D Ps / ∑Pz	Vou cfm	Vps cfm	Xs	Ev	Vot cfm	%OA Vot / Vps
Alternative 1												
Zone	System - 015	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	System - 016	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	System - 017	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	System - 018	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	System - 019	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	System - 020	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	System - 021	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0

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Ventilation Parameters

System Zone Room	Rp cfm / p	Pz People	Ra cfm/ft²	Az ft²	Vbz cfm	— Cooling — Ez	— Cooling — Voz cfm	— Heating — Ez	— Heating — Voz cfm
Alternative 1									
DUMMY	0.00	0.00	0.00	0	0		0		0
PSZ-AC	0.00	0.00	0.00	0	0		0		0
NORTHEAST OFFICES	0.00	0.00	0.00	0	0		0		0
System - 002	0.00	0.00	0.00	0	0		0		0
ADMIN / OPS ROOM	0.00	0.00	0.00	0	0		0		0
System - 003	0.00	0.00	0.00	0	0		0		0
NORTH OFFICES	0.00	0.00	0.00	0	0		0		0
System - 004	0.00	0.00	0.00	0	0		0		0
ELECTRICAL ROOM	0.00	0.00	0.00	0	0		0		0
System - 005	0.00	0.00	0.00	0	0		0		0
MECHANICAL ROOM	0.00	0.00	0.00	0	0		0		0
System - 006	0.00	0.00	0.00	0	0		0		0
TELECOM ROOM	0.00	0.00	0.00	0	0		0		0
System - 007	0.00	0.00	0.00	0	0		0		0
DUTY AGENT OFFICE	0.00	0.00	0.00	0	0		0		0
System - 008	0.00	0.00	0.00	0	0		0		0
EVIDENCE DEPOSITORY	0.00	0.00	0.00	0	0		0		0
System - 009	0.00	0.00	0.00	0	0		0		0
EVIDENCE PROCESSING	0.00	0.00	0.00	0	0		0		0
System - 010	0.00	0.00	0.00	0	0		0		0
CORE SUSPECT AREA	0.00	0.00	0.00	0	0		0		0
System - 011	0.00	0.00	0.00	0	0		0		0
SOUTHWEST OFFICES	0.00	0.00	0.00	0	0		0		0
System - 012	0.00	0.00	0.00	0	0		0		0
CIC	0.00	0.00	0.00	0	0		0		0
System - 013	0.00	0.00	0.00	0	0		0		0
MULTIPURPOSE LOUNGE	0.00	0.00	0.00	0	0		0		0
System - 014	0.00	0.00	0.00	0	0		0		0
LARGE INTERVIEW / SAC	0.00	0.00	0.00	0	0		0		0
System - 015	0.00	0.00	0.00	0	0		0		0
RESTROOMS	0.00	0.00	0.00	0	0		0		0

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Ventilation Parameters

System Zone Room	Rp cfm / p	Pz People	Ra cfm/ft²	Az ft²	Vbz cfm	— Cooling — Ez	— Cooling — Voz cfm	— Heating — Ez	— Heating — Voz cfm
Alternative 1									
System - 016	0.00	0.00	0.00	0	0		0		0
VISITOR WAITING AREA	0.00	0.00	0.00	0	0		0		0
System - 017	0.00	0.00	0.00	0	0		0		0
VESTIBULE NORTH	0.00	0.00	0.00	0	0		0		0
System - 018	0.00	0.00	0.00	0	0		0		0
TOE STORAGE / ARMS VAULT	0.00	0.00	0.00	0	0		0		0
System - 019	0.00	0.00	0.00	0	0		0		0
VESTIBULE WEST	0.00	0.00	0.00	0	0		0		0
System - 020	0.00	0.00	0.00	0	0		0		0
EAST VESTIBULE	0.00	0.00	0.00	0	0		0		0
System - 021	0.00	0.00	0.00	0	0		0		0

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Ventilation Calculations for Cooling Design

System Zone Room	Box Type	Vpz cfm	Vfan cfm	Vdz cfm	Vpz-min cfm	Voz-clg cfm	Zd	Ep	Er	Fa	Fb	Fc	Evz
Alternative 1													
DUMMY		0	0	0	0	0							0.000
PSZ-AC		0	0	0	0	0							0.000
NORTHEAST OFFICES		0	0	0	0	0							0.000
System - 002		0	0	0	0	0							0.000
ADMIN / OPS ROOM		0	0	0	0	0							0.000
System - 003		0	0	0	0	0							0.000
NORTH OFFICES		0	0	0	0	0							0.000
System - 004		0	0	0	0	0							0.000
ELECTRICAL ROOM		0	0	0	0	0							0.000
System - 005		0	0	0	0	0							0.000
MECHANICAL ROOM		0	0	0	0	0							0.000
System - 006		0	0	0	0	0							0.000
TELECOM ROOM		0	0	0	0	0							0.000
System - 007		0	0	0	0	0							0.000
DUTY AGENT OFFICE		0	0	0	0	0							0.000
System - 008		0	0	0	0	0							0.000
EVIDENCE DEPOSITORY		0	0	0	0	0							0.000
System - 009		0	0	0	0	0							0.000
EVIDENCE PROCESSING		0	0	0	0	0							0.000
System - 010		0	0	0	0	0							0.000
CORE SUSPECT AREA		0	0	0	0	0							0.000
System - 011		0	0	0	0	0							0.000
SOUTHWEST OFFICES		0	0	0	0	0							0.000
System - 012		0	0	0	0	0							0.000
CIC		0	0	0	0	0							0.000
System - 013		0	0	0	0	0							0.000
MULTIPURPOSE LOUNGE		0	0	0	0	0							0.000
System - 014		0	0	0	0	0							0.000
LARGE INTERVIEW / SAC		0	0	0	0	0							0.000
System - 015		0	0	0	0	0							0.000
RESTROOMS		0	0	0	0	0							0.000
System - 016		0	0	0	0	0							0.000
VISITOR WAITING AREA		0	0	0	0	0							0.000

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Ventilation Calculations for Cooling Design

System Zone Room	Box Type	Vpz cfm	Vfan cfm	Vdz cfm	Vpz-min cfm	Voz-clg cfm	Zd	Ep	Er	Fa	Fb	Fc	Evz
Alternative 1													
System - 017		0	0	0	0	0							0.000
VESTIBULE NORTH		0	0	0	0	0							0.000
System - 018		0	0	0	0	0							0.000
TOE STORAGE / ARMS VAULT		0	0	0	0	0							0.000
System - 019		0	0	0	0	0							0.000
VESTIBULE WEST		0	0	0	0	0							0.000
System - 020		0	0	0	0	0							0.000
EAST VESTIBULE		0	0	0	0	0							0.000
System - 021		0	0	0	0	0							0.000

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Ventilation Calculations for Heating Design

System Zone Room	Box Type	Vpz cfm	Vfan cfm	Vdz cfm	Vpz-min cfm	Voz-htg cfm	Zd	Ep	Er	Fa	Fb	Fc	Evz
Alternative 1													
DUMMY		0	0	0	0	0							0.000
PSZ-AC		0	0	0	0	0							0.000
NORTHEAST OFFICES		0	0	0	0	0							0.000
System - 002		0	0	0	0	0							0.000
ADMIN / OPS ROOM		0	0	0	0	0							0.000
System - 003		0	0	0	0	0							0.000
NORTH OFFICES		0	0	0	0	0							0.000
System - 004		0	0	0	0	0							0.000
ELECTRICAL ROOM		0	0	0	0	0							0.000
System - 005		0	0	0	0	0							0.000
MECHANICAL ROOM		0	0	0	0	0							0.000
System - 006		0	0	0	0	0							0.000
TELECOM ROOM		0	0	0	0	0							0.000
System - 007		0	0	0	0	0							0.000
DUTY AGENT OFFICE		0	0	0	0	0							0.000
System - 008		0	0	0	0	0							0.000
EVIDENCE DEPOSITORY		0	0	0	0	0							0.000
System - 009		0	0	0	0	0							0.000
EVIDENCE PROCESSING		0	0	0	0	0							0.000
System - 010		0	0	0	0	0							0.000
CORE SUSPECT AREA		0	0	0	0	0							0.000
System - 011		0	0	0	0	0							0.000
SOUTHWEST OFFICES		0	0	0	0	0							0.000
System - 012		0	0	0	0	0							0.000
CIC		0	0	0	0	0							0.000
System - 013		0	0	0	0	0							0.000
MULTIPURPOSE LOUNGE		0	0	0	0	0							0.000
System - 014		0	0	0	0	0							0.000
LARGE INTERVIEW / SAC		0	0	0	0	0							0.000
System - 015		0	0	0	0	0							0.000
RESTROOMS		0	0	0	0	0							0.000
System - 016		0	0	0	0	0							0.000
VISITOR WAITING AREA		0	0	0	0	0							0.000

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Ventilation Calculations for Heating Design

System Zone Room	Box Type	Vpz cfm	Vfan cfm	Vdz cfm	Vpz-min cfm	Voz-htg cfm	Zd	Ep	Er	Fa	Fb	Fc	Evz
Alternative 1													
System - 017		0	0	0	0	0							0.000
VESTIBULE NORTH		0	0	0	0	0							0.000
System - 018		0	0	0	0	0							0.000
TOE STORAGE / ARMS VAULT		0	0	0	0	0							0.000
System - 019		0	0	0	0	0							0.000
VESTIBULE WEST		0	0	0	0	0							0.000
System - 020		0	0	0	0	0							0.000
EAST VESTIBULE		0	0	0	0	0							0.000
System - 021		0	0	0	0	0							0.000

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System Ventilation Requirements

AHU Location	Description		∑Vpz cfm	Ps People	∑ Pz People	D Ps / ∑Pz	Vou cfm	Vps cfm	Xs	Ev	Vot cfm	%OA Vot / Vps
Alternative 2												
System	Primary - VAV w/ BB	Cooling	2,748	47	47	1.00	561	2,403	0.233	0.633	885	36.8
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
System	Secondary - VAV w/ BB	Cooling	898	17	17	1.00	204	881	0.232	0.632	323	36.7
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	DUMMY	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	CUHs - Vestibules	Cooling	261	0	0	1.00	0	261	0.000	1.000	0	0.0
		Heating	261	0	0	1.00	0	261	0.000	1.000	0	0.0
Zone	FCU - Elec	Cooling	200	0	0	1.00	200	200	1.000	1.000	200	100.0
		Heating	200	0	0	1.00	200	200	1.000	1.000	200	100.0
Room	FCU - Evid Dep	Cooling	171	0	0	1.00	60	171	0.350	1.000	60	35.0
		Heating	171	0	0	1.00	60	171	0.350	1.000	60	35.0
Room	FCU - TR	Cooling	39	0	0	1.00	9	39	0.220	1.000	9	22.0
		Heating	39	0	0	1.00	9	39	0.220	1.000	9	22.0
Zone	FCU - Mech	Cooling	397	0	0	1.00	397	397	1.000	1.000	397	100.0
		Heating	397	0	0	1.00	397	397	1.000	1.000	397	100.0

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Ventilation Parameters

System Zone Room	Rp cfm / p	Pz People	Ra cfm/ft²	Az ft²	Vbz cfm	— Cooling — Ez	— Cooling — Voz cfm	— Heating — Ez	— Heating — Voz cfm
Alternative 2									
101 VISITOR WAITING AREA	5.00	4.00	0.06	251	35	1.00	35	0.00	0
VISITOR WAITING AREA	5.00	4.00	0.06	251	35		35		0
102 CORRIDOR	0.00	0.00	0.06	141	8	1.00	8	0.00	0
103 MEN	0.00	1.42	0.00	153	0	1.00	0	0.00	0
104 WOMEN	0.00	1.46	0.00	157	0	1.00	0	0.00	0
107 SHOWER	0.00	1.00	0.00	119	0	1.00	0	0.00	0
142 JANITOR	0.00	0.17	0.00	51	0	1.00	0	0.00	0
RESTROOMS	0.00	4.05	0.01	621	8		8		0
105 CORRIDOR	0.00	0.72	0.06	220	13	1.00	13	0.00	0
108 SPECIAL AGENT IN CHARGE	5.00	1.00	0.06	199	17	1.00	17	0.00	0
109 LARGE INTERVIEW ROOM	5.00	8.00	0.06	254	55	1.00	55	0.00	0
LARGE INTERVIEW / SAC	4.63	9.72	0.06	673	85		85		0
106 MULTI-PURPOSE LOUNGE	5.00	16.00	0.06	496	110	1.00	110	0.00	0
131A CORRIDOR	0.00	0.00	0.06	179	11	1.00	11	0.00	0
139 CORRIDOR	0.00	0.00	0.06	128	8	1.00	8	0.00	0
MULTIPURPOSE LOUNGE	5.00	16.00	0.06	803	128		128		0
110 CRIMINAL INTELLIGENCE ROOM	5.00	1.00	0.06	298	23	1.00	23	0.00	0
CIC	5.00	1.00	0.06	298	23		23		0
125 TABLE OF ORGANIZATION AND EQUIPMEI	0.00	0.00	0.12	520	62	1.00	62	0.00	0
126 ARMS VAULT	0.00	0.00	0.12	65	8	1.00	8	0.00	0
TOE STORAGE / ARMS VAULT	0.00	0.00	0.12	585	70		70		0
130 CRIMINAL INVESTIGATOR OFFICE	5.00	1.00	0.06	154	14	1.00	14	0.00	0
131 CORRIDOR	0.00	0.00	0.06	428	26	1.00	26	0.00	0
132 INVESTIGATIVE OPS TECH OFFICE	5.00	1.00	0.06	156	14	1.00	14	0.00	0
133 DRUG SUPPRESSION TEAM OFFICE	5.00	1.00	0.06	154	14	1.00	14	0.00	0
134 DRUG SUPPRESSION TEAM OFFICE	5.00	1.00	0.06	154	14	1.00	14	0.00	0
NORTH OFFICES	5.00	4.00	0.06	1,046	83		83		0
131B CORRIDOR	0.00	0.00	0.06	167	10	1.00	10	0.00	0
141 ADMIN / OPS ROOM	5.00	4.00	0.06	671	60	1.00	60	0.00	0
140 RECYCLE CLOSET	0.00	0.13	0.00	39	0	1.00	0	0.00	0
ADMIN / OPS ROOM	4.85	4.13	0.06	876	70		70		0

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Ventilation Parameters

System Zone Room	Rp cfm / p	Pz People	Ra cfm/ft²	Az ft²	Vbz cfm	— Cooling — Ez	— Cooling — Voz cfm	— Heating — Ez	— Heating — Voz cfm
Alternative 2									
135 SPECIAL AGENT OFFICE	5.00	1.00	0.06	154	14	1.00	14	0.00	0
136 SPECIAL AGENT OFFICE	5.00	1.00	0.06	154	14	1.00	14	0.00	0
137 SPECIAL AGENT OFFICE	5.00	1.00	0.06	148	14	1.00	14	0.00	0
138 SPECIAL AGENT OFFICE	5.00	1.00	0.06	166	15	1.00	15	0.00	0
NORTHEAST OFFICES	5.00	4.00	0.06	623	57		57		0
Primary - VAV w/ BB	4.48	46.89	0.06	5,776	561		561		0
111 SMALL INTERVIEW ROOM	5.00	2.00	0.06	141	18	1.00	18	0.00	0
112 SMALL INTERVIEW ROOM	5.00	2.00	0.06	139	18	1.00	18	0.00	0
113 PHOTO ID ROOM	5.00	0.00	0.06	131	8	1.00	8	0.00	0
121 EVIDENCE CUSTODIAN OFFICE	5.00	1.00	0.06	168	15	1.00	15	0.00	0
SOUTHWEST OFFICES	5.00	5.00	0.06	579	60		60		0
114 CORRIDOR	0.00	0.00	0.06	279	17	1.00	17	0.00	0
115 POLYGRAPH EXAM OFFICE	5.00	2.00	0.06	104	16	1.00	16	0.00	0
116 POLYGRAPH EXAM ROOM	5.00	2.00	0.06	108	16	1.00	16	0.00	0
117 OBSERVATION ROOM	5.00	2.00	0.06	143	19	1.00	19	0.00	0
118 SUSPECT WAITING ROOM	5.00	4.00	0.06	160	30	1.00	30	0.00	0
119 SUSPECT TOILET	0.00	0.13	0.00	41	0	1.00	0	0.00	0
CORE SUSPECT AREA	4.93	10.13	0.06	835	98		98		0
114A CORRIDOR	0.00	0.00	0.06	175	10	1.00	10	0.00	0
120 CORRIDOR	0.00	0.00	0.06	120	7	1.00	7	0.00	0
124 EVIDENCE PROCESSING	5.00	1.00	0.06	169	15	1.00	15	0.00	0
EVIDENCE PROCESSING	5.00	1.00	0.06	464	33		33		0
123 DUTY AGENT OFFICE	5.00	1.00	0.06	153	14	1.00	14	0.00	0
DUTY AGENT OFFICE	5.00	1.00	0.06	153	14		14		0
Secondary - VAV w/ BB	4.96	17.13	0.06	2,030	204		204		0
DUMMY	0.00	0.00	0.00	0	0		0		0
DUMMY	0.00	0.00	0.00	0	0		0		0
001 ENTRY VESTIBULE	0.00	0.00	0.00	132	0	1.00	0	1.00	0
EAST VESTIBULE	0.00	0.00	0.00	132	0		0		0
002 VESTIBULE WEST	0.00	0.00	0.00	64	0	1.00	0	1.00	0
VESTIBULE WEST	0.00	0.00	0.00	64	0		0		0

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Ventilation Parameters

System Zone Room	Rp cfm / p	Pz People	Ra cfm/ft²	Az ft²	Vbz cfm	Cooling Ez	Cooling Voz cfm	Heating Ez	Heating Voz cfm
Alternative 2									
003 VESTIBULE NORTH	0.00	0.00	0.00	66	0	1.00	0	1.00	0
VESTIBULE NORTH	0.00	0.00	0.00	66	0		0		0
CUHs - Vestibules	0.00	0.00	0.00	261	0		0		0
129 ELECTRICAL ROOM	0.00	0.00	10.00	133	200	1.00	200	1.00	200
ELECTRICAL ROOM	0.00	0.00	1.50	133	200		200		200
FCU - Elec	0.00	0.00	1.50	133	200		200		200
122 EVIDENCE DEPOSITORY ROOM	0.00	0.00	0.12	497	60	1.00	60	1.00	60
EVIDENCE DEPOSITORY	0.00	0.00	0.12	497	60		60		60
FCU - Evid Dep	0.00	0.00	0.12	497	60		60		60
127 TELECOM ROOM	0.00	0.00	0.06	144	9	1.00	9	1.00	9
TELECOM ROOM	0.00	0.00	0.06	144	9		9		9
FCU - TR	0.00	0.00	0.06	144	9		9		9
128 MECHANICAL ROOM	0.00	0.00	6.00	441	397	1.00	397	1.00	397
MECHANICAL ROOM	0.00	0.00	0.90	441	397		397		397
FCU - Mech	0.00	0.00	0.90	441	397		397		397

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Ventilation Calculations for Cooling Design

System Zone Room	Box Type	Vpz cfm	Vfan cfm	Vdz cfm	Vpz-min cfm	Voz-clg cfm	Zd	Ep	Er	Fa	Fb	Fc	Evz	
Alternative 2														
101 VISITOR WAITING AREA	Shutoff VAV	156	156	156	58	35	0.600	1.00	0.00	1.00	1.00	1.00	0.633	*
VISITOR WAITING AREA		156	156	156	58	35							0.633	
102 CORRIDOR	Shutoff VAV	23	23	23	14	8	0.600	1.00	0.00	1.00	1.00	1.00	0.633	*
103 MEN	Shutoff VAV	68	68	68	20	0	0.000	1.00	0.00	1.00	1.00	1.00	1.000	
104 WOMEN	Shutoff VAV	64	64	64	19	0	0.000	1.00	0.00	1.00	1.00	1.00	1.000	
107 SHOWER	Shutoff VAV	38	38	38	11	0	0.000	1.00	0.00	1.00	1.00	1.00	1.000	
142 JANITOR	Shutoff VAV	12	12	12	4	0	0.000	1.00	0.00	1.00	1.00	1.00	1.000	
RESTROOMS		205	205	205	69	8							0.633	
105 CORRIDOR	Shutoff VAV	53	53	53	22	13	0.600	1.00	0.00	1.00	1.00	1.00	0.633	*
108 SPECIAL AGENT IN CHARGE	Shutoff VAV	169	169	169	51	17	0.334	1.00	0.00	1.00	1.00	1.00	0.899	
109 LARGE INTERVIEW ROOM	Shutoff VAV	296	296	296	92	55	0.600	1.00	0.00	1.00	1.00	1.00	0.633	*
LARGE INTERVIEW / SAC		517	517	517	165	85							0.633	
106 MULTI-PURPOSE LOUNGE	Shutoff VAV	299	299	299	183	110	0.600	1.00	0.00	1.00	1.00	1.00	0.633	*
131A CORRIDOR	Shutoff VAV	27	27	27	18	11	0.600	1.00	0.00	1.00	1.00	1.00	0.633	*
139 CORRIDOR	Shutoff VAV	26	26	26	13	8	0.600	1.00	0.00	1.00	1.00	1.00	0.633	*
MULTIPURPOSE LOUNGE		352	352	352	214	128							0.633	
110 CRIMINAL INTELLIGENCE R(	Shutoff VAV	78	78	78	38	23	0.600	1.00	0.00	1.00	1.00	1.00	0.633	*
CIC		78	78	78	38	23							0.633	
125 TABLE OF ORGANIZATION A	Shutoff VAV	399	399	399	120	62	0.521	1.00	0.00	1.00	1.00	1.00	0.712	
126 ARMS VAULT	Shutoff VAV	17	17	17	13	8	0.600	1.00	0.00	1.00	1.00	1.00	0.633	*
TOE STORAGE / ARMS VAULT		417	417	417	133	70							0.633	
130 CRIMINAL INVESTIGATOR O	Shutoff VAV	71	71	71	24	14	0.600	1.00	0.00	1.00	1.00	1.00	0.633	*
131 CORRIDOR	Shutoff VAV	97	97	97	43	26	0.600	1.00	0.00	1.00	1.00	1.00	0.633	*
132 INVESTIGATIVE OPS TECH (	Shutoff VAV	66	66	66	24	14	0.600	1.00	0.00	1.00	1.00	1.00	0.633	*
133 DRUG SUPPRESSION TEAM	Shutoff VAV	65	65	65	24	14	0.600	1.00	0.00	1.00	1.00	1.00	0.633	*
134 DRUG SUPPRESSION TEAM	Shutoff VAV	64	64	64	24	14	0.600	1.00	0.00	1.00	1.00	1.00	0.633	*
NORTH OFFICES		362	362	362	138	83							0.633	
131B CORRIDOR	Shutoff VAV	25	25	25	17	10	0.600	1.00	0.00	1.00	1.00	1.00	0.633	*
141 ADMIN / OPS ROOM	Shutoff VAV	318	318	318	100	60	0.600	1.00	0.00	1.00	1.00	1.00	0.633	*
140 RECYCLE CLOSET	Shutoff VAV	12	12	12	4	0	0.000	1.00	0.00	1.00	1.00	1.00	1.000	
ADMIN / OPS ROOM		355	355	355	121	70							0.633	
135 SPECIAL AGENT OFFICE	Shutoff VAV	64	64	64	24	14	0.600	1.00	0.00	1.00	1.00	1.00	0.633	*
136 SPECIAL AGENT OFFICE	Shutoff VAV	64	64	64	24	14	0.600	1.00	0.00	1.00	1.00	1.00	0.633	*

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Ventilation Calculations for Cooling Design

System Zone Room	Box Type	Vpz cfm	Vfan cfm	Vdz cfm	Vpz-min cfm	Voz-clg cfm	Zd	Ep	Er	Fa	Fb	Fc	Evz	
Alternative 2														
137 SPECIAL AGENT OFFICE	Shutoff VAV	63	63	63	23	14	0.600	1.00	0.00	1.00	1.00	1.00	0.633	*
138 SPECIAL AGENT OFFICE	Shutoff VAV	116	116	116	35	15	0.431	1.00	0.00	1.00	1.00	1.00	0.802	
NORTHEAST OFFICES		306	306	306	105	57							0.633	
Primary - VAV w/ BB		2,748	2,403	2,748	1,040	561							0.633	
111 SMALL INTERVIEW ROOM	Shutoff VAV	128	128	128	38	18	0.482	1.00	0.00	1.00	1.00	1.00	0.750	
112 SMALL INTERVIEW ROOM	Shutoff VAV	127	127	127	38	18	0.481	1.00	0.00	1.00	1.00	1.00	0.751	
113 PHOTO ID ROOM	Shutoff VAV	39	39	39	13	8	0.600	1.00	0.00	1.00	1.00	1.00	0.632	*
121 EVIDENCE CUSTODIAN OFF	Shutoff VAV	57	57	57	25	15	0.600	1.00	0.00	1.00	1.00	1.00	0.632	*
SOUTHWEST OFFICES		351	351	351	115	60							0.632	
114 CORRIDOR	Shutoff VAV	64	64	64	28	17	0.600	1.00	0.00	1.00	1.00	1.00	0.632	*
115 POLYGRAPH EXAM OFFICE	Shutoff VAV	59	59	59	27	16	0.600	1.00	0.00	1.00	1.00	1.00	0.632	*
116 POLYGRAPH EXAM ROOM	Shutoff VAV	60	60	60	27	16	0.600	1.00	0.00	1.00	1.00	1.00	0.632	*
117 OBSERVATION ROOM	Shutoff VAV	64	64	64	31	19	0.600	1.00	0.00	1.00	1.00	1.00	0.632	*
118 SUSPECT WAITING ROOM	Shutoff VAV	102	102	102	49	30	0.600	1.00	0.00	1.00	1.00	1.00	0.632	*
119 SUSPECT TOILET	Shutoff VAV	26	26	26	8	0	0.000	1.00	0.00	1.00	1.00	1.00	1.000	
CORE SUSPECT AREA		375	375	375	170	98							0.632	
114A CORRIDOR	Shutoff VAV	28	28	28	17	10	0.600	1.00	0.00	1.00	1.00	1.00	0.632	*
120 CORRIDOR	Shutoff VAV	26	26	26	12	7	0.600	1.00	0.00	1.00	1.00	1.00	0.632	*
124 EVIDENCE PROCESSING	Shutoff VAV	54	54	54	25	15	0.600	1.00	0.00	1.00	1.00	1.00	0.632	*
EVIDENCE PROCESSING		107	107	107	55	33							0.632	
123 DUTY AGENT OFFICE	Shutoff VAV	65	65	65	24	14	0.600	1.00	0.00	1.00	1.00	1.00	0.632	*
DUTY AGENT OFFICE		65	65	65	24	14							0.632	
Secondary - VAV w/ BB		898	881	898	363	204							0.632	
DUMMY		0	0	0	0	0							0.000	
DUMMY		0	0	0	0	0							0.000	
001 ENTRY VESTIBULE	Single Fan CV	181	181	181	0	0	0.000	1.00	0.00	1.00	1.00	1.00	1.000	*
EAST VESTIBULE		181	181	181	0	0							1.000	
002 VESTIBULE WEST	Single Fan CV	57	57	57	0	0	0.000	1.00	0.00	1.00	1.00	1.00	1.000	*
VESTIBULE WEST		57	57	57	0	0							1.000	
003 VESTIBULE NORTH	Single Fan CV	23	23	23	0	0	0.000	1.00	0.00	1.00	1.00	1.00	1.000	*
VESTIBULE NORTH		23	23	23	0	0							1.000	
CUHs - Vestibules		261	261	261	0	0							1.000	
129 ELECTRICAL ROOM	Single Fan CV	200	200	200	0	200	1.000	1.00	0.00	1.00	1.00	1.00	1.000	*

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By PB

Ventilation Calculations for Cooling Design

System Zone Room	Box Type	Vpz cfm	Vfan cfm	Vdz cfm	Vpz-min cfm	Voz-clg cfm	Zd	Ep	Er	Fa	Fb	Fc	Evz	
Alternative 2														
ELECTRICAL ROOM		200	200	200	0	200							1.000	
FCU - Elec		200	200	200	0	200							1.000	
122 EVIDENCE DEPOSITORY RC	Single Fan CV	171	171	171	0	60	0.350	1.00	0.00	1.00	1.00	1.00	0.000	
EVIDENCE DEPOSITORY		171	171	171	0	60							1.000	
FCU - Evid Dep		171	171	171	0	60							1.000	
127 TELECOM ROOM	Single Fan CV	39	39	39	0	9	0.220	1.00	0.00	1.00	1.00	1.00	0.000	
TELECOM ROOM		39	39	39	0	9							1.000	
FCU - TR		39	39	39	0	9							1.000	
128 MECHANICAL ROOM	Single Fan CV	397	397	397	0	397	1.000	1.00	0.00	1.00	1.00	1.00	1.000	*
MECHANICAL ROOM		397	397	397	0	397							1.000	
FCU - Mech		397	397	397	0	397							1.000	

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Ventilation Calculations for Heating Design

System Zone Room	Box Type	Vpz cfm	Vfan cfm	Vdz cfm	Vpz-min cfm	Voz-htg cfm	Zd	Ep	Er	Fa	Fb	Fc	Evz
Alternative 2													
101 VISITOR WAITING AREA	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
VISITOR WAITING AREA		0	0	0	0	0							0.000
102 CORRIDOR	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
103 MEN	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
104 WOMEN	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
107 SHOWER	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
142 JANITOR	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
RESTROOMS		0	0	0	0	0							0.000
105 CORRIDOR	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
108 SPECIAL AGENT IN CHARGE	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
109 LARGE INTERVIEW ROOM	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
LARGE INTERVIEW / SAC		0	0	0	0	0							0.000
106 MULTI-PURPOSE LOUNGE	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
131A CORRIDOR	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
139 CORRIDOR	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
MULTIPURPOSE LOUNGE		0	0	0	0	0							0.000
110 CRIMINAL INTELLIGENCE R(	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
CIC		0	0	0	0	0							0.000
125 TABLE OF ORGANIZATION A	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
126 ARMS VAULT	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
TOE STORAGE / ARMS VAULT		0	0	0	0	0							0.000
130 CRIMINAL INVESTIGATOR O	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
131 CORRIDOR	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
132 INVESTIGATIVE OPS TECH (	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
133 DRUG SUPPRESSION TEAM	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
134 DRUG SUPPRESSION TEAM	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
NORTH OFFICES		0	0	0	0	0							0.000
131B CORRIDOR	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
141 ADMIN / OPS ROOM	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
140 RECYCLE CLOSET	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
ADMIN / OPS ROOM		0	0	0	0	0							0.000
135 SPECIAL AGENT OFFICE	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000
136 SPECIAL AGENT OFFICE	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000

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By PB

Ventilation Calculations for Heating Design

System Zone Room	Box Type	Vpz cfm	Vfan cfm	Vdz cfm	Vpz-min cfm	Voz-htg cfm	Zd	Ep	Er	Fa	Fb	Fc	Evz	
Alternative 2														
137 SPECIAL AGENT OFFICE	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000	
138 SPECIAL AGENT OFFICE	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000	
NORTHEAST OFFICES		0	0	0	0	0							0.000	
Primary - VAV w/ BB		0	0	0	0	0							0.000	
111 SMALL INTERVIEW ROOM	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000	
112 SMALL INTERVIEW ROOM	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000	
113 PHOTO ID ROOM	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000	
121 EVIDENCE CUSTODIAN OFF	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000	
SOUTHWEST OFFICES		0	0	0	0	0							0.000	
114 CORRIDOR	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000	
115 POLYGRAPH EXAM OFFICE	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000	
116 POLYGRAPH EXAM ROOM	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000	
117 OBSERVATION ROOM	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000	
118 SUSPECT WAITING ROOM	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000	
119 SUSPECT TOILET	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000	
CORE SUSPECT AREA		0	0	0	0	0							0.000	
114A CORRIDOR	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000	
120 CORRIDOR	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000	
124 EVIDENCE PROCESSING	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000	
EVIDENCE PROCESSING		0	0	0	0	0							0.000	
123 DUTY AGENT OFFICE	Induction	0	0	0	0	0	0.000	0.00	0.00	0.00	0.00	0.00	0.000	
DUTY AGENT OFFICE		0	0	0	0	0							0.000	
Secondary - VAV w/ BB		0	0	0	0	0							0.000	
DUMMY		0	0	0	0	0							0.000	
DUMMY		0	0	0	0	0							0.000	
001 ENTRY VESTIBULE	Single Fan CV	181	181	181	0	0	0.000	1.00	0.00	1.00	1.00	1.00	1.000	*
EAST VESTIBULE		181	181	181	0	0							1.000	
002 VESTIBULE WEST	Single Fan CV	57	57	57	0	0	0.000	1.00	0.00	1.00	1.00	1.00	1.000	*
VESTIBULE WEST		57	57	57	0	0							1.000	
003 VESTIBULE NORTH	Single Fan CV	23	23	23	0	0	0.000	1.00	0.00	1.00	1.00	1.00	1.000	*
VESTIBULE NORTH		23	23	23	0	0							1.000	
CUHs - Vestibules		261	261	261	0	0							1.000	
129 ELECTRICAL ROOM	Single Fan CV	200	200	200	0	200	1.000	1.00	0.00	1.00	1.00	1.00	1.000	*

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Ventilation Calculations for Heating Design

System Zone Room	Box Type	Vpz cfm	Vfan cfm	Vdz cfm	Vpz-min cfm	Voz-htg cfm	Zd	Ep	Er	Fa	Fb	Fc	Evz	
Alternative 2														
ELECTRICAL ROOM		200	200	200	0	200							1.000	
FCU - Elec		200	200	200	0	200							1.000	
122 EVIDENCE DEPOSITORY RO	Single Fan CV	171	171	171	0	60	0.350	1.00	0.00	1.00	1.00	1.00	0.000	
EVIDENCE DEPOSITORY		171	171	171	0	60							1.000	
FCU - Evid Dep		171	171	171	0	60							1.000	
127 TELECOM ROOM	Single Fan CV	39	39	39	0	9	0.220	1.00	0.00	1.00	1.00	1.00	0.000	
TELECOM ROOM		39	39	39	0	9							1.000	
FCU - TR		39	39	39	0	9							1.000	
128 MECHANICAL ROOM	Single Fan CV	397	397	397	0	397	1.000	1.00	0.00	1.00	1.00	1.00	1.000	*
MECHANICAL ROOM		397	397	397	0	397							1.000	
FCU - Mech		397	397	397	0	397							1.000	

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System Ventilation Requirements

AHU Location	Description		∑Vpz cfm	Ps People	∑ Pz People	D Ps / ∑Pz	Vou cfm	Vps cfm	Xs	Ev	Vot cfm	%OA Vot / Vps
Alternative 3												
System	Primary - FPTU w/ Reheat	Cooling	2,748	47	47	1.00	561	2,403	0.233	0.633	885	36.8
		Heating	1,040	47	47	1.00	561	1,040	0.539	0.939	597	57.4
System	Secondary - FPTU w/ Reheat	Cooling	898	17	17	1.00	204	881	0.232	0.632	323	36.7
		Heating	363	17	17	1.00	204	363	0.562	0.962	212	58.4
Zone	DUMMY	Cooling	0	0	0	0.00	0	0	0.000	0.000	0	0.0
		Heating	0	0	0	0.00	0	0	0.000	0.000	0	0.0
Zone	CUHs - Vestibules	Cooling	261	0	0	1.00	0	261	0.000	1.000	0	0.0
		Heating	261	0	0	1.00	0	261	0.000	1.000	0	0.0
Zone	FCU - Elec	Cooling	200	0	0	1.00	200	200	1.000	1.000	200	100.0
		Heating	200	0	0	1.00	200	200	1.000	1.000	200	100.0
Room	FCU - Evid Dep	Cooling	171	0	0	1.00	60	171	0.350	1.000	60	35.0
		Heating	171	0	0	1.00	60	171	0.350	1.000	60	35.0
Room	FCU - TR	Cooling	39	0	0	1.00	9	39	0.220	1.000	9	22.0
		Heating	39	0	0	1.00	9	39	0.220	1.000	9	22.0
Zone	FCU - Mech	Cooling	397	0	0	1.00	397	397	1.000	1.000	397	100.0
		Heating	397	0	0	1.00	397	397	1.000	1.000	397	100.0

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Ventilation Parameters

System Zone Room	Rp cfm / p	Pz People	Ra cfm/ft²	Az ft²	Vbz cfm	— Cooling — Ez	— Cooling — Voz cfm	— Heating — Ez	— Heating — Voz cfm
Alternative 3									
101 VISITOR WAITING AREA	5.00	4.00	0.06	251	35	1.00	35	1.00	35
VISITOR WAITING AREA	5.00	4.00	0.06	251	35		35		35
102 CORRIDOR	0.00	0.00	0.06	141	8	1.00	8	1.00	8
103 MEN	0.00	1.42	0.00	153	0	1.00	0	1.00	0
104 WOMEN	0.00	1.46	0.00	157	0	1.00	0	1.00	0
107 SHOWER	0.00	1.00	0.00	119	0	1.00	0	1.00	0
142 JANITOR	0.00	0.17	0.00	51	0	1.00	0	1.00	0
RESTROOMS	0.00	4.05	0.01	621	8		8		8
105 CORRIDOR	0.00	0.72	0.06	220	13	1.00	13	1.00	13
108 SPECIAL AGENT IN CHARGE	5.00	1.00	0.06	199	17	1.00	17	1.00	17
109 LARGE INTERVIEW ROOM	5.00	8.00	0.06	254	55	1.00	55	1.00	55
LARGE INTERVIEW / SAC	4.63	9.72	0.06	673	85		85		85
106 MULTI-PURPOSE LOUNGE	5.00	16.00	0.06	496	110	1.00	110	1.00	110
131A CORRIDOR	0.00	0.00	0.06	179	11	1.00	11	1.00	11
139 CORRIDOR	0.00	0.00	0.06	128	8	1.00	8	1.00	8
MULTIPURPOSE LOUNGE	5.00	16.00	0.06	803	128		128		128
110 CRIMINAL INTELLIGENCE ROOM	5.00	1.00	0.06	298	23	1.00	23	1.00	23
CIC	5.00	1.00	0.06	298	23		23		23
125 TABLE OF ORGANIZATION AND EQUIPMEI	0.00	0.00	0.12	520	62	1.00	62	1.00	62
126 ARMS VAULT	0.00	0.00	0.12	65	8	1.00	8	1.00	8
TOE STORAGE / ARMS VAULT	0.00	0.00	0.12	585	70		70		70
130 CRIMINAL INVESTIGATOR OFFICE	5.00	1.00	0.06	154	14	1.00	14	1.00	14
131 CORRIDOR	0.00	0.00	0.06	428	26	1.00	26	1.00	26
132 INVESTIGATIVE OPS TECH OFFICE	5.00	1.00	0.06	156	14	1.00	14	1.00	14
133 DRUG SUPPRESSION TEAM OFFICE	5.00	1.00	0.06	154	14	1.00	14	1.00	14
134 DRUG SUPPRESSION TEAM OFFICE	5.00	1.00	0.06	154	14	1.00	14	1.00	14
NORTH OFFICES	5.00	4.00	0.06	1,046	83		83		83
131B CORRIDOR	0.00	0.00	0.06	167	10	1.00	10	1.00	10
141 ADMIN / OPS ROOM	5.00	4.00	0.06	671	60	1.00	60	1.00	60
140 RECYCLE CLOSET	0.00	0.13	0.00	39	0	1.00	0	1.00	0
ADMIN / OPS ROOM	4.85	4.13	0.06	876	70		70		70

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Ventilation Parameters

System Zone Room	Rp cfm / p	Pz People	Ra cfm/ft²	Az ft²	Vbz cfm	— Cooling — Ez	— Cooling — Voz cfm	— Heating — Ez	— Heating — Voz cfm
Alternative 3									
135 SPECIAL AGENT OFFICE	5.00	1.00	0.06	154	14	1.00	14	1.00	14
136 SPECIAL AGENT OFFICE	5.00	1.00	0.06	154	14	1.00	14	1.00	14
137 SPECIAL AGENT OFFICE	5.00	1.00	0.06	148	14	1.00	14	1.00	14
138 SPECIAL AGENT OFFICE	5.00	1.00	0.06	166	15	1.00	15	1.00	15
NORTHEAST OFFICES	5.00	4.00	0.06	623	57		57		57
Primary - FPTU w/ Reheat	4.48	46.89	0.06	5,776	561		561		561
111 SMALL INTERVIEW ROOM	5.00	2.00	0.06	141	18	1.00	18	1.00	18
112 SMALL INTERVIEW ROOM	5.00	2.00	0.06	139	18	1.00	18	1.00	18
113 PHOTO ID ROOM	5.00	0.00	0.06	131	8	1.00	8	1.00	8
121 EVIDENCE CUSTODIAN OFFICE	5.00	1.00	0.06	168	15	1.00	15	1.00	15
SOUTHWEST OFFICES	5.00	5.00	0.06	579	60		60		60
114 CORRIDOR	0.00	0.00	0.06	279	17	1.00	17	1.00	17
115 POLYGRAPH EXAM OFFICE	5.00	2.00	0.06	104	16	1.00	16	1.00	16
116 POLYGRAPH EXAM ROOM	5.00	2.00	0.06	108	16	1.00	16	1.00	16
117 OBSERVATION ROOM	5.00	2.00	0.06	143	19	1.00	19	1.00	19
118 SUSPECT WAITING ROOM	5.00	4.00	0.06	160	30	1.00	30	1.00	30
119 SUSPECT TOILET	0.00	0.13	0.00	41	0	1.00	0	1.00	0
CORE SUSPECT AREA	4.93	10.13	0.06	835	98		98		98
114A CORRIDOR	0.00	0.00	0.06	175	10	1.00	10	1.00	10
120 CORRIDOR	0.00	0.00	0.06	120	7	1.00	7	1.00	7
124 EVIDENCE PROCESSING	5.00	1.00	0.06	169	15	1.00	15	1.00	15
EVIDENCE PROCESSING	5.00	1.00	0.06	464	33		33		33
123 DUTY AGENT OFFICE	5.00	1.00	0.06	153	14	1.00	14	1.00	14
DUTY AGENT OFFICE	5.00	1.00	0.06	153	14		14		14
Secondary - FPTU w/ Reheat	4.96	17.13	0.06	2,030	204		204		204
DUMMY	0.00	0.00	0.00	0	0		0		0
DUMMY	0.00	0.00	0.00	0	0		0		0
001 ENTRY VESTIBULE	0.00	0.00	0.00	132	0	1.00	0	1.00	0
EAST VESTIBULE	0.00	0.00	0.00	132	0		0		0
002 VESTIBULE WEST	0.00	0.00	0.00	64	0	1.00	0	1.00	0
VESTIBULE WEST	0.00	0.00	0.00	64	0		0		0

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Ventilation Parameters

System Zone Room	Rp cfm / p	Pz People	Ra cfm/ft²	Az ft²	Vbz cfm	— Cooling — Ez	— Cooling — Voz cfm	— Heating — Ez	— Heating — Voz cfm
Alternative 3									
003 VESTIBULE NORTH	0.00	0.00	0.00	66	0	1.00	0	1.00	0
VESTIBULE NORTH	0.00	0.00	0.00	66	0		0		0
CUHs - Vestibules	0.00	0.00	0.00	261	0		0		0
129 ELECTRICAL ROOM	0.00	0.00	10.00	133	200	1.00	200	1.00	200
ELECTRICAL ROOM	0.00	0.00	1.50	133	200		200		200
FCU - Elec	0.00	0.00	1.50	133	200		200		200
122 EVIDENCE DEPOSITORY ROOM	0.00	0.00	0.12	497	60	1.00	60	1.00	60
EVIDENCE DEPOSITORY	0.00	0.00	0.12	497	60		60		60
FCU - Evid Dep	0.00	0.00	0.12	497	60		60		60
127 TELECOM ROOM	0.00	0.00	0.06	144	9	1.00	9	1.00	9
TELECOM ROOM	0.00	0.00	0.06	144	9		9		9
FCU - TR	0.00	0.00	0.06	144	9		9		9
128 MECHANICAL ROOM	0.00	0.00	6.00	441	397	1.00	397	1.00	397
MECHANICAL ROOM	0.00	0.00	0.90	441	397		397		397
FCU - Mech	0.00	0.00	0.90	441	397		397		397

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Ventilation Calculations for Cooling Design

System Zone Room	Box Type	Vpz cfm	Vfan cfm	Vdz cfm	Vpz-min cfm	Voz-clg cfm	Zd	Ep	Er	Fa	Fb	Fc	Evz	
Alternative 3														
101 VISITOR WAITING AREA	PFP Reheat	156	156	156	58	35	0.600	1.00	0.30	1.00	1.00	1.00	0.633	*
VISITOR WAITING AREA		156	156	156	58	35							0.633	
102 CORRIDOR	PFP Reheat	23	23	23	14	8	0.600	1.00	0.30	1.00	1.00	1.00	0.633	*
103 MEN	PFP Reheat	68	68	68	20	0	0.000	1.00	0.30	1.00	1.00	1.00	1.000	
104 WOMEN	PFP Reheat	64	64	64	19	0	0.000	1.00	0.30	1.00	1.00	1.00	1.000	
107 SHOWER	PFP Reheat	38	38	38	11	0	0.000	1.00	0.30	1.00	1.00	1.00	1.000	
142 JANITOR	PFP Reheat	12	12	12	4	0	0.000	1.00	0.30	1.00	1.00	1.00	1.000	
RESTROOMS		205	205	205	69	8							0.633	
105 CORRIDOR	PFP Reheat	53	53	53	22	13	0.600	1.00	0.30	1.00	1.00	1.00	0.633	*
108 SPECIAL AGENT IN CHARGE	PFP Reheat	169	169	169	51	17	0.334	1.00	0.30	1.00	1.00	1.00	0.899	
109 LARGE INTERVIEW ROOM	PFP Reheat	296	296	296	92	55	0.600	1.00	0.30	1.00	1.00	1.00	0.633	*
LARGE INTERVIEW / SAC		517	517	517	165	85							0.633	
106 MULTI-PURPOSE LOUNGE	PFP Reheat	299	299	299	183	110	0.600	1.00	0.30	1.00	1.00	1.00	0.633	*
131A CORRIDOR	PFP Reheat	27	27	27	18	11	0.600	1.00	0.30	1.00	1.00	1.00	0.633	*
139 CORRIDOR	PFP Reheat	26	26	26	13	8	0.600	1.00	0.30	1.00	1.00	1.00	0.633	*
MULTIPURPOSE LOUNGE		352	352	352	214	128							0.633	
110 CRIMINAL INTELLIGENCE R(	PFP Reheat	78	78	78	38	23	0.600	1.00	0.30	1.00	1.00	1.00	0.633	*
CIC		78	78	78	38	23							0.633	
125 TABLE OF ORGANIZATION A	PFP Reheat	399	399	399	120	62	0.521	1.00	0.30	1.00	1.00	1.00	0.712	
126 ARMS VAULT	PFP Reheat	17	17	17	13	8	0.600	1.00	0.30	1.00	1.00	1.00	0.633	*
TOE STORAGE / ARMS VAULT		417	417	417	133	70							0.633	
130 CRIMINAL INVESTIGATOR O	PFP Reheat	71	71	71	24	14	0.600	1.00	0.30	1.00	1.00	1.00	0.633	*
131 CORRIDOR	PFP Reheat	97	97	97	43	26	0.600	1.00	0.30	1.00	1.00	1.00	0.633	*
132 INVESTIGATIVE OPS TECH (	PFP Reheat	66	66	66	24	14	0.600	1.00	0.30	1.00	1.00	1.00	0.633	*
133 DRUG SUPPRESSION TEAM	PFP Reheat	65	65	65	24	14	0.600	1.00	0.30	1.00	1.00	1.00	0.633	*
134 DRUG SUPPRESSION TEAM	PFP Reheat	64	64	64	24	14	0.600	1.00	0.30	1.00	1.00	1.00	0.633	*
NORTH OFFICES		362	362	362	138	83							0.633	
131B CORRIDOR	PFP Reheat	25	25	25	17	10	0.600	1.00	0.30	1.00	1.00	1.00	0.633	*
141 ADMIN / OPS ROOM	PFP Reheat	318	318	318	100	60	0.600	1.00	0.30	1.00	1.00	1.00	0.633	*
140 RECYCLE CLOSET	PFP Reheat	12	12	12	4	0	0.000	1.00	0.30	1.00	1.00	1.00	1.000	
ADMIN / OPS ROOM		355	355	355	121	70							0.633	
135 SPECIAL AGENT OFFICE	PFP Reheat	64	64	64	24	14	0.600	1.00	0.30	1.00	1.00	1.00	0.633	*
136 SPECIAL AGENT OFFICE	PFP Reheat	64	64	64	24	14	0.600	1.00	0.30	1.00	1.00	1.00	0.633	*

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Ventilation Calculations for Cooling Design

System Zone Room	Box Type	Vpz cfm	Vfan cfm	Vdz cfm	Vpz-min cfm	Voz-clg cfm	Zd	Ep	Er	Fa	Fb	Fc	Evz	
Alternative 3														
137 SPECIAL AGENT OFFICE	PFP Reheat	63	63	63	23	14	0.600	1.00	0.30	1.00	1.00	1.00	0.633	*
138 SPECIAL AGENT OFFICE	PFP Reheat	116	116	116	35	15	0.431	1.00	0.30	1.00	1.00	1.00	0.802	
NORTHEAST OFFICES		306	306	306	105	57							0.633	
Primary - FPTU w/ Reheat		2,748	2,403	2,748	1,040	561							0.633	
111 SMALL INTERVIEW ROOM	PFP Reheat	128	128	128	38	18	0.482	1.00	0.30	1.00	1.00	1.00	0.750	
112 SMALL INTERVIEW ROOM	PFP Reheat	127	127	127	38	18	0.481	1.00	0.30	1.00	1.00	1.00	0.751	
113 PHOTO ID ROOM	PFP Reheat	39	39	39	13	8	0.600	1.00	0.30	1.00	1.00	1.00	0.632	*
121 EVIDENCE CUSTODIAN OFF	PFP Reheat	57	57	57	25	15	0.600	1.00	0.30	1.00	1.00	1.00	0.632	*
SOUTHWEST OFFICES		351	351	351	115	60							0.632	
114 CORRIDOR	PFP Reheat	64	64	64	28	17	0.600	1.00	0.30	1.00	1.00	1.00	0.632	*
115 POLYGRAPH EXAM OFFICE	PFP Reheat	59	59	59	27	16	0.600	1.00	0.30	1.00	1.00	1.00	0.632	*
116 POLYGRAPH EXAM ROOM	PFP Reheat	60	60	60	27	16	0.600	1.00	0.30	1.00	1.00	1.00	0.632	*
117 OBSERVATION ROOM	PFP Reheat	64	64	64	31	19	0.600	1.00	0.30	1.00	1.00	1.00	0.632	*
118 SUSPECT WAITING ROOM	PFP Reheat	102	102	102	49	30	0.600	1.00	0.30	1.00	1.00	1.00	0.632	*
119 SUSPECT TOILET	PFP Reheat	26	26	26	8	0	0.000	1.00	0.30	1.00	1.00	1.00	1.000	
CORE SUSPECT AREA		375	375	375	170	98							0.632	
114A CORRIDOR	PFP Reheat	28	28	28	17	10	0.600	1.00	0.30	1.00	1.00	1.00	0.632	*
120 CORRIDOR	PFP Reheat	26	26	26	12	7	0.600	1.00	0.30	1.00	1.00	1.00	0.632	*
124 EVIDENCE PROCESSING	PFP Reheat	54	54	54	25	15	0.600	1.00	0.30	1.00	1.00	1.00	0.632	*
EVIDENCE PROCESSING		107	107	107	55	33							0.632	
123 DUTY AGENT OFFICE	PFP Reheat	65	65	65	24	14	0.600	1.00	0.30	1.00	1.00	1.00	0.632	*
DUTY AGENT OFFICE		65	65	65	24	14							0.632	
Secondary - FPTU w/ Reheat		898	881	898	363	204							0.632	
DUMMY		0	0	0	0	0							0.000	
DUMMY		0	0	0	0	0							0.000	
001 ENTRY VESTIBULE	Single Fan CV	181	181	181	0	0	0.000	1.00	0.00	1.00	1.00	1.00	1.000	*
EAST VESTIBULE		181	181	181	0	0							1.000	
002 VESTIBULE WEST	Single Fan CV	57	57	57	0	0	0.000	1.00	0.00	1.00	1.00	1.00	1.000	*
VESTIBULE WEST		57	57	57	0	0							1.000	
003 VESTIBULE NORTH	Single Fan CV	23	23	23	0	0	0.000	1.00	0.00	1.00	1.00	1.00	1.000	*
VESTIBULE NORTH		23	23	23	0	0							1.000	
CUHs - Vestibules		261	261	261	0	0							1.000	
129 ELECTRICAL ROOM	Single Fan CV	200	200	200	0	200	1.000	1.00	0.00	1.00	1.00	1.00	1.000	*

ASHRAE Standard 62.1-2004/2007

By PB

Ventilation Calculations for Cooling Design

System Zone Room	Box Type	Vpz cfm	Vfan cfm	Vdz cfm	Vpz-min cfm	Voz-clg cfm	Zd	Ep	Er	Fa	Fb	Fc	Evz	
Alternative 3														
ELECTRICAL ROOM		200	200	200	0	200							1.000	
FCU - Elec		200	200	200	0	200							1.000	
122 EVIDENCE DEPOSITORY RC	Single Fan CV	171	171	171	0	60	0.350	1.00	0.00	1.00	1.00	1.00	0.000	
EVIDENCE DEPOSITORY		171	171	171	0	60							1.000	
FCU - Evid Dep		171	171	171	0	60							1.000	
127 TELECOM ROOM	Single Fan CV	39	39	39	0	9	0.220	1.00	0.00	1.00	1.00	1.00	0.000	
TELECOM ROOM		39	39	39	0	9							1.000	
FCU - TR		39	39	39	0	9							1.000	
128 MECHANICAL ROOM	Single Fan CV	397	397	397	0	397	1.000	1.00	0.00	1.00	1.00	1.00	1.000	*
MECHANICAL ROOM		397	397	397	0	397							1.000	
FCU - Mech		397	397	397	0	397							1.000	

ASHRAE Standard 62.1-2004/2007

By PB

Ventilation Calculations for Heating Design

System Zone Room	Box Type	Vpz cfm	Vfan cfm	Vdz cfm	Vpz-min cfm	Voz-htg cfm	Zd	Ep	Er	Fa	Fb	Fc	Evz	
Alternative 3														
101 VISITOR WAITING AREA	PFP Reheat	58	58	58	58	35	0.600	1.00	0.30	1.00	1.00	1.00	0.939	*
VISITOR WAITING AREA		58	58	58	58	35							0.939	
102 CORRIDOR	PFP Reheat	14	14	14	14	8	0.600	1.00	0.30	1.00	1.00	1.00	0.939	*
103 MEN	PFP Reheat	20	20	20	20	0	0.000	1.00	0.30	1.00	1.00	1.00	1.000	
104 WOMEN	PFP Reheat	19	19	19	19	0	0.000	1.00	0.30	1.00	1.00	1.00	1.000	
107 SHOWER	PFP Reheat	11	11	11	11	0	0.000	1.00	0.30	1.00	1.00	1.00	1.000	
142 JANITOR	PFP Reheat	4	4	4	4	0	0.000	1.00	0.30	1.00	1.00	1.00	1.000	
RESTROOMS		69	69	69	69	8							0.939	
105 CORRIDOR	PFP Reheat	22	22	22	22	13	0.600	1.00	0.30	1.00	1.00	1.00	0.939	*
108 SPECIAL AGENT IN CHARGE	PFP Reheat	51	51	51	51	17	0.334	1.00	0.30	1.00	1.00	1.00	1.000	
109 LARGE INTERVIEW ROOM	PFP Reheat	92	92	92	92	55	0.600	1.00	0.30	1.00	1.00	1.00	0.939	*
LARGE INTERVIEW / SAC		165	165	165	165	85							0.939	
106 MULTI-PURPOSE LOUNGE	PFP Reheat	183	183	183	183	110	0.600	1.00	0.30	1.00	1.00	1.00	0.939	*
131A CORRIDOR	PFP Reheat	18	18	18	18	11	0.600	1.00	0.30	1.00	1.00	1.00	0.939	*
139 CORRIDOR	PFP Reheat	13	13	13	13	8	0.600	1.00	0.30	1.00	1.00	1.00	0.939	*
MULTIPURPOSE LOUNGE		214	214	214	214	128							0.939	
110 CRIMINAL INTELLIGENCE R(	PFP Reheat	38	38	38	38	23	0.600	1.00	0.30	1.00	1.00	1.00	0.939	*
CIC		38	38	38	38	23							0.939	
125 TABLE OF ORGANIZATION A	PFP Reheat	120	120	120	120	62	0.521	1.00	0.30	1.00	1.00	1.00	1.000	
126 ARMS VAULT	PFP Reheat	13	13	13	13	8	0.600	1.00	0.30	1.00	1.00	1.00	0.939	*
TOE STORAGE / ARMS VAULT		133	133	133	133	70							0.939	
130 CRIMINAL INVESTIGATOR O	PFP Reheat	24	24	24	24	14	0.600	1.00	0.30	1.00	1.00	1.00	0.939	*
131 CORRIDOR	PFP Reheat	43	43	43	43	26	0.600	1.00	0.30	1.00	1.00	1.00	0.939	*
132 INVESTIGATIVE OPS TECH C	PFP Reheat	24	24	24	24	14	0.600	1.00	0.30	1.00	1.00	1.00	0.939	*
133 DRUG SUPPRESSION TEAM	PFP Reheat	24	24	24	24	14	0.600	1.00	0.30	1.00	1.00	1.00	0.939	*
134 DRUG SUPPRESSION TEAM	PFP Reheat	24	24	24	24	14	0.600	1.00	0.30	1.00	1.00	1.00	0.939	*
NORTH OFFICES		138	138	138	138	83							0.939	
131B CORRIDOR	PFP Reheat	17	17	17	17	10	0.600	1.00	0.30	1.00	1.00	1.00	0.939	*
141 ADMIN / OPS ROOM	PFP Reheat	100	100	100	100	60	0.600	1.00	0.30	1.00	1.00	1.00	0.939	*
140 RECYCLE CLOSET	PFP Reheat	4	4	4	4	0	0.000	1.00	0.30	1.00	1.00	1.00	1.000	
ADMIN / OPS ROOM		121	121	121	121	70							0.939	
135 SPECIAL AGENT OFFICE	PFP Reheat	24	24	24	24	14	0.600	1.00	0.30	1.00	1.00	1.00	0.939	*
136 SPECIAL AGENT OFFICE	PFP Reheat	24	24	24	24	14	0.600	1.00	0.30	1.00	1.00	1.00	0.939	*

ASHRAE Standard 62.1-2004/2007

By PB

Ventilation Calculations for Heating Design

System Zone Room	Box Type	Vpz cfm	Vfan cfm	Vdz cfm	Vpz-min cfm	Voz-htg cfm	Zd	Ep	Er	Fa	Fb	Fc	Evz	
Alternative 3														
137 SPECIAL AGENT OFFICE	PFP Reheat	23	23	23	23	14	0.600	1.00	0.30	1.00	1.00	1.00	0.939	*
138 SPECIAL AGENT OFFICE	PFP Reheat	35	35	35	35	15	0.431	1.00	0.30	1.00	1.00	1.00	1.000	
NORTHEAST OFFICES		105	105	105	105	57							0.939	
Primary - FPTU w/ Reheat		1,040	1,040	1,040	1,040	561							0.939	
111 SMALL INTERVIEW ROOM	PFP Reheat	38	38	38	38	18	0.482	1.00	0.30	1.00	1.00	1.00	1.000	
112 SMALL INTERVIEW ROOM	PFP Reheat	38	38	38	38	18	0.481	1.00	0.30	1.00	1.00	1.00	1.000	
113 PHOTO ID ROOM	PFP Reheat	13	13	13	13	8	0.600	1.00	0.30	1.00	1.00	1.00	0.962	*
121 EVIDENCE CUSTODIAN OFF	PFP Reheat	25	25	25	25	15	0.600	1.00	0.30	1.00	1.00	1.00	0.962	*
SOUTHWEST OFFICES		115	115	115	115	60							0.962	
114 CORRIDOR	PFP Reheat	28	28	28	28	17	0.600	1.00	0.30	1.00	1.00	1.00	0.962	*
115 POLYGRAPH EXAM OFFICE	PFP Reheat	27	27	27	27	16	0.600	1.00	0.30	1.00	1.00	1.00	0.962	*
116 POLYGRAPH EXAM ROOM	PFP Reheat	27	27	27	27	16	0.600	1.00	0.30	1.00	1.00	1.00	0.962	*
117 OBSERVATION ROOM	PFP Reheat	31	31	31	31	19	0.600	1.00	0.30	1.00	1.00	1.00	0.962	*
118 SUSPECT WAITING ROOM	PFP Reheat	49	49	49	49	30	0.600	1.00	0.30	1.00	1.00	1.00	0.962	*
119 SUSPECT TOILET	PFP Reheat	8	8	10	8	0	0.000	1.00	0.30	1.00	1.00	1.00	1.000	
CORE SUSPECT AREA		170	170	173	170	98							0.962	
114A CORRIDOR	PFP Reheat	17	17	17	17	10	0.600	1.00	0.30	1.00	1.00	1.00	0.962	*
120 CORRIDOR	PFP Reheat	12	12	12	12	7	0.600	1.00	0.30	1.00	1.00	1.00	0.962	*
124 EVIDENCE PROCESSING	PFP Reheat	25	25	25	25	15	0.600	1.00	0.30	1.00	1.00	1.00	0.962	*
EVIDENCE PROCESSING		55	55	55	55	33							0.962	
123 DUTY AGENT OFFICE	PFP Reheat	24	24	24	24	14	0.600	1.00	0.30	1.00	1.00	1.00	0.962	*
DUTY AGENT OFFICE		24	24	24	24	14							0.962	
Secondary - FPTU w/ Reheat		363	363	366	363	204							0.962	
DUMMY		0	0	0	0	0							0.000	
DUMMY		0	0	0	0	0							0.000	
001 ENTRY VESTIBULE	Single Fan CV	181	181	181	0	0	0.000	1.00	0.00	1.00	1.00	1.00	1.000	*
EAST VESTIBULE		181	181	181	0	0							1.000	
002 VESTIBULE WEST	Single Fan CV	57	57	57	0	0	0.000	1.00	0.00	1.00	1.00	1.00	1.000	*
VESTIBULE WEST		57	57	57	0	0							1.000	
003 VESTIBULE NORTH	Single Fan CV	23	23	23	0	0	0.000	1.00	0.00	1.00	1.00	1.00	1.000	*
VESTIBULE NORTH		23	23	23	0	0							1.000	
CUHs - Vestibules		261	261	261	0	0							1.000	
129 ELECTRICAL ROOM	Single Fan CV	200	200	200	0	200	1.000	1.00	0.00	1.00	1.00	1.00	1.000	*

ASHRAE Standard 62.1-2004/2007

By PB

Ventilation Calculations for Heating Design

System Zone Room	Box Type	Vpz cfm	Vfan cfm	Vdz cfm	Vpz-min cfm	Voz-htg cfm	Zd	Ep	Er	Fa	Fb	Fc	Evz	
Alternative 3														
ELECTRICAL ROOM		200	200	200	0	200							1.000	
FCU - Elec		200	200	200	0	200							1.000	
122 EVIDENCE DEPOSITORY RO	Single Fan CV	171	171	171	0	60	0.350	1.00	0.00	1.00	1.00	1.00	0.000	
EVIDENCE DEPOSITORY		171	171	171	0	60							1.000	
FCU - Evid Dep		171	171	171	0	60							1.000	
127 TELECOM ROOM	Single Fan CV	39	39	39	0	9	0.220	1.00	0.00	1.00	1.00	1.00	0.000	
TELECOM ROOM		39	39	39	0	9							1.000	
FCU - TR		39	39	39	0	9							1.000	
128 MECHANICAL ROOM	Single Fan CV	397	397	397	0	397	1.000	1.00	0.00	1.00	1.00	1.00	1.000	*
MECHANICAL ROOM		397	397	397	0	397							1.000	
FCU - Mech		397	397	397	0	397							1.000	

MONTHLY ENERGY CONSUMPTION

By PB

------- Monthly Energy Consumption -------

Utility	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Alternative: 1	**ASHRAE 90_1-2007 Baseline**												
Electric													
On-Pk Cons. (kWh)	10,803	9,973	11,524	11,016	11,377	13,085	14,502	13,237	11,556	11,493	10,704	11,069	140,339
On-Pk Demand (kW)	28	28	31	28	37	43	43	38	40	35	28	28	43
Gas													
On-Pk Cons. (therms)	370	278	237	83	11	1	0	1	6	66	196	300	1,549
On-Pk Demand (therms/hr)	3	3	3	3	1	0	0	0	1	2	3	3	3

Energy Consumption

Building	68,061	Btu/(ft2-year)
Source	171,811	Btu/(ft2-year)
Floor Area	9,313	ft2

Environmental Impact Analysis

CO2	No Data Available
SO2	No Data Available
NOX	No Data Available

MONTHLY ENERGY CONSUMPTION

By PB

------- Monthly Energy Consumption -------

Utility	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Alternative: 2	**Self contained VAV Units w/ Clg Tower**												
Electric													
On-Pk Cons. (kWh)	8,957	8,326	9,796	9,724	10,060	11,506	12,383	11,767	10,358	10,386	9,221	9,274	121,757
On-Pk Demand (kW)	28	27	30	28	31	34	35	32	35	31	28	27	35
Gas													
On-Pk Cons. (therms)	262	175	131	40	1	0	5	6	12	58	130	189	1,010
On-Pk Demand (therms/hr)	2	1	1	0	0	0	0	0	0	0	1	2	2
Water													
Cons. (1000gal)	0	0	1	2	3	7	9	7	4	2	1	0	35

Energy Consumption

Building	55,466	Btu/(ft2-year)
Source	145,291	Btu/(ft2-year)
Floor Area	9,313	ft2

Environmental Impact Analysis

CO2	No Data Available
SO2	No Data Available
NOX	No Data Available

MONTHLY ENERGY CONSUMPTION

By PB

Utility	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
	------- Monthly Energy Consumption -------												
Alternative: 3	**VAV Fan Coil Units w/ Air Cooled Chiller**												
Electric													
On-Pk Cons. (kWh)	8,203	7,535	8,838	8,380	9,224	11,549	12,992	11,768	9,730	8,999	8,194	8,366	113,780
On-Pk Demand (kW)	23	22	29	27	36	38	39	35	38	34	27	22	39
Gas													
On-Pk Cons. (therms)	258	168	122	27	1	0	5	6	13	38	117	182	938
On-Pk Demand (therms/hr)	2	2	1	1	0	0	0	0	0	1	1	2	2

Energy Consumption

Building	51,769	Btu/(ft2-year)
Source	135,705	Btu/(ft2-year)
Floor Area	9,313	ft2

Environmental Impact Analysis

CO2	No Data Available
SO2	No Data Available
NOX	No Data Available

ENERGY CONSUMPTION SUMMARY

By PB

	Elect Cons. (kWh)	Gas Cons. (kBtu)	% of Total Building Energy	Total Building Energy (kBtu/yr)	Total Source Energy* (kBtu/yr)
Alternative 1					
Primary heating					
Primary heating		157,254	24.9 %	157,254	165,531
Other Htg Accessories			0.0 %	0	0
Heating Subtotal		**157,254**	**24.9** %	**157,254**	**165,531**
Primary cooling					
Cooling Compressor	8,265		4.5 %	28,207	84,629
Tower/Cond Fans	630		0.3 %	2,149	6,449
Condenser Pump			0.0 %	0	0
Other Clg Accessories	161		0.1 %	549	1,649
Cooling Subtotal....	**9,055**		**4.9** %	**30,906**	**92,726**
Auxiliary					
Supply Fans	27,092		14.7 %	92,465	277,423
Pumps			0.0 %	0	0
Stand-alone Base Utilities	31,270		16.9 %	106,723	320,201
Aux Subtotal....	58,362		31.6 %	199,188	597,624
Lighting					
Lighting	40,119		21.7 %	136,926	410,820
Receptacle					
Receptacles	31,170		16.9 %	106,384	319,184
Cogeneration					
Cogeneration			0.0 %	0	0
Totals					
Totals**	**138,706**	**157,254**	**100.0** %	**630,659**	**1,585,886**

* Note: Resource Utilization factors are included in the Total Source Energy value.

** Note: This report can display a maximum of 7 utilities. If additional utilities are used, they will be included in the total.

ENERGY CONSUMPTION SUMMARY

By PB

	Elect Cons. (kWh)	Gas Cons. (kBtu)	Water Cons. (1000 gals)	% of Total Building Energy	Total Building Energy (kBtu/yr)	Total Source Energy* (kBtu/yr)
Alternative 2						
Primary heating						
Primary heating		101,014		19.6 %	101,014	106,330
Other Htg Accessories	3,973			2.6 %	13,561	40,687
Heating Subtotal	**3,973**	**101,014**		**22.2** %	**114,575**	**147,017**
Primary cooling						
Cooling Compressor	12,426			8.2 %	42,409	127,239
Tower/Cond Fans	1,796		35	1.2 %	6,129	18,390
Condenser Pump	2,084			1.4 %	7,112	21,338
Other Clg Accessories	4,695			3.1 %	16,025	48,081
Cooling Subtotal....	**21,001**		**35**	**13.9** %	**71,675**	**215,047**
Auxiliary						
Supply Fans	5,896			3.9 %	20,123	60,375
Pumps				0.0 %	0	0
Stand-alone Base Utilities	31,270			20.7 %	106,723	320,201
Aux Subtotal....	37,166			24.6 %	126,846	380,577
Lighting						
Lighting	28,447			18.8 %	97,090	291,300
Receptacle						
Receptacles	31,170			20.6 %	106,384	319,184
Cogeneration						
Cogeneration				0.0 %	0	0
Totals						
Totals**	**121,757**	**101,014**	**35**	**100.0** %	**516,571**	**1,353,126**

* Note: Resource Utilization factors are included in the Total Source Energy value.

** Note: This report can display a maximum of 7 utilities. If additional utilities are used, they will be included in the total.

ENERGY CONSUMPTION SUMMARY

By PB

	Elect Cons. (kWh)	Gas Cons. (kBtu)	% of Total Building Energy	Total Building Energy (kBtu/yr)	Total Source Energy* (kBtu/yr)
Alternative 3					
Primary heating					
Primary heating		93,805	19.5 %	93,805	98,742
Other Htg Accessories	2,110		1.5 %	7,201	21,605
Heating Subtotal	**2,110**	**93,805**	**21.0** %	**101,006**	**120,348**
Primary cooling					
Cooling Compressor	8,920		6.3 %	30,445	91,345
Tower/Cond Fans	566		0.4 %	1,931	5,793
Condenser Pump			0.0 %	0	0
Other Clg Accessories	1,113		0.8 %	3,800	11,400
Cooling Subtotal....	**10,599**		**7.5** %	**36,176**	**108,538**
Auxiliary					
Supply Fans	4,692		3.3 %	16,014	48,046
Pumps	5,491		3.9 %	18,742	56,231
Stand-alone Base Utilities	31,270		22.1 %	106,723	320,201
Aux Subtotal....	41,453		29.3 %	141,479	424,479
Lighting					
Lighting	28,447		20.1 %	97,090	291,300
Receptacle					
Receptacles	31,170		22.1 %	106,384	319,184
Cogeneration					
Cogeneration			0.0 %	0	0
Totals					
Totals**	**113,780**	**93,805**	**100.0** %	**482,135**	**1,263,848**

* Note: Resource Utilization factors are included in the Total Source Energy value.

** Note: This report can display a maximum of 7 utilities. If additional utilities are used, they will be included in the total.

Location	
Building owner	
Program user	
Company	
Comments	

By	**PBHA**
Dataset name	**C:\USERS\AGEBREHANA\FT-DRUM.TRC**

Calculation time	**04:02 PM on 06/05/2012**	
TRACE® 700 version	**6.2.8**	
Location	**Buffalo, New York**	
Latitude	**43.0**	**deg**
Longitude	**78.0**	**deg**
Time Zone	**5**	
Elevation	**705**	**ft**
Barometric pressure	**29.1**	**in. Hg**
Air density	**0.0740**	**lb/cu ft**
Air specific heat	**0.2444**	**Btu/lb·°F**
Density-specific heat product	**1.0852**	**Btu/h·cfm·°F**
Latent heat factor	**4,776.9**	**Btu·min/h·cu ft**
Enthalpy factor	**4.4395**	**lb·min/hr·cu ft**
Summer design dry bulb	**88**	**°F**
Summer design wet bulb	**71**	**°F**
Winter design dry bulb	**-32**	**°F**
Summer clearness number	**0.90**	
Winter clearness number	**0.90**	
Summer ground reflectance	**0.20**	
Winter ground reflectance	**0.20**	
Carbon Dioxide Level	**400**	**ppm**
Design simulation period	**January - December**	
Cooling load methodology	**TETD-TA1**	
Heating load methodology	**UATD**	

System Checksums

By PBHA

System - 001 **Ventilation and Heating**

COOLING COIL PEAK

Peaked at Time: Mo/Hr: 0 / 0
Outside Air: OADB/WB/HR: 0 / 0 / 0

	Space Sens. + Lat. Btu/h	Plenum Sens. + Lat Btu/h	Net Total Btu/h	Percent Of Total (%)
Envelope Loads				
Skylite Solar	0	0	0	0
Skylite Cond	0	0	0	0
Roof Cond	0	0	0	0
Glass Solar	0	0	0	0
Glass/Door Cond	0	0	0	0
Wall Cond	0	0	0	0
Partition/Door	0		0	0
Floor	0		0	0
Adjacent Floor	0	0	0	0
Infiltration	0		0	0
Sub Total ==>	0	0	0	0
Internal Loads				
Lights	0	0	0	0
People	0	0	0	0
Misc	0	0	0	0
Sub Total ==>	0	0	0	0
Ceiling Load	0	0	0	0
Ventilation Load	0	0	0	0
Adj Air Trans Heat	0		0	0
Dehumid. Ov Sizing			0	0
Ov/Undr Sizing	0		0	0
Exhaust Heat		0	0	0
Sup. Fan Heat			0	0
Ret. Fan Heat		0	0	0
Duct Heat Pkup		0	0	0
Underflr Sup Ht Pkup			0	0
Supply Air Leakage		0	0	0
Grand Total ==>	0	0	0	100.00

CLG SPACE PEAK

Mo/Hr: 0 / 0
OADB: 0

	Space Sensible Btu/h	Percent Of Total (%)
Envelope Loads		
Skylite Solar	0	0
Skylite Cond	0	0
Roof Cond	0	0
Glass Solar	0	0
Glass/Door Cond	0	0
Wall Cond	0	0
Partition/Door	0	0
Floor	0	0
Adjacent Floor	0	0
Infiltration	0	0
Sub Total ==>	0	0
Internal Loads		
Lights	0	0
People	0	0
Misc	0	0
Sub Total ==>	0	0
Ceiling Load	0	0
Ventilation Load	0	0
Adj Air Trans Heat	0	0
Ov/Undr Sizing	0	0
Grand Total ==>	0	100.00

HEATING COIL PEAK

Mo/Hr: Heating Design
OADB: -32

	Space Peak Space Sens Btu/h	Coil Peak Tot Sens Btu/h	Percent Of Total (%)
Envelope Loads			
Skylite Solar	0	0	0.00
Skylite Cond	0	0	0.00
Roof Cond	-4,540	-4,540	15.34
Glass Solar	0	0	0.00
Glass/Door Cond	-2,686	-2,686	9.08
Wall Cond	-6,605	-6,605	22.31
Partition/Door	0	0	0.00
Floor	-5,508	-5,508	18.61
Adjacent Floor	0	0	0
Infiltration	-6,314	-6,314	21.33
Sub Total ==>	-25,653	-25,653	86.67
Internal Loads			
Lights	0	0	0.00
People	0	0	0.00
Misc	0	0	0.00
Sub Total ==>	0	0	0.00
Ceiling Load	0	0	0.00
Ventilation Load	0	-3,946	13.33
Adj Air Trans Heat	0	0	0
Ov/Undr Sizing	0	0	0.00
Exhaust Heat		0	0.00
OA Preheat Diff.		0	0.00
RA Preheat Diff.		0	0.00
Additional Reheat		0	0.00
Underflr Sup Ht Pkup		0	0.00
Supply Air Leakage		0	0.00
Grand Total ==>	-25,653	-29,599	100.00

TEMPERATURES

	Cooling	Heating
SADB	0.0	125.0
Ra Plenum	0.0	70.0
Return	0.0	70.0
Ret/OA	0.0	61.5
Fn MtrTD	0.0	0.0
Fn BldTD	0.0	0.0
Fn Frict	0.0	0.0

AIRFLOWS

	Cooling	Heating
Diffuser	0	430
Terminal	0	430
Main Fan	0	430
Sec Fan	0	0
Nom Vent	0	36
AHU Vent	0	36
Infil	0	57
MinStop/Rh	0	0
Return	0	487
Exhaust	0	93
Rm Exh	0	0
Auxiliary	0	0
Leakage Dwn	0	0
Leakage Ups	0	0

ENGINEERING CKS

	Cooling	Heating
% OA	0.0	8.3
cfm/ft²	0.00	0.60
cfm/ton	0.00	
ft²/ton	0.00	
Btu/hr·ft²	0.00	-41.51
No. People	0	

COOLING COIL SELECTION

	Total Capacity ton	Total Capacity MBh	Sens Cap. MBh	Coil Airflow cfm	Enter DB °F	Enter WB °F	Enter HR gr/lb	Leave DB °F	Leave WB °F	Leave HR gr/lb
Main Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Aux Clg	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Opt Vent	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	0.0								

AREAS

	Gross Total	Glass ft²	Glass (%)
Floor	713		
Part	0		
Int Door	0		
ExFlr	108		
Roof	713	0	0
Wall	1,853	0	0
Ext Door	131	0	0

HEATING COIL SELECTION

	Capacity MBh	Coil Airflow cfm	Ent °F	Lvg °F
Main Htg	-29.6	430	61.5	125.0
Aux Htg	0.0	0	0.0	0.0
Preheat	0.0	0	0.0	0.0
Humidif	0.0	0	0.0	0.0
Opt Vent	0.0	0	0.0	0.0
Total	-29.6			

APPENDIX F

ANSI/ASHRAE STANDARD 189.1 COMPLIANCE

CORRECTED FINAL SUBMISSION
12 SEPTEMBER 2012

Indoor Environmental Quality (IEQ) Compliance Documentation – Mandatory

Project Name: U.S. Army Criminal Investigations Command--RA 10-15	
Project Address:	Date: 12 September 2012
Designer of Record:	Telephone:
Contact Person:	Telephone:
City:	

Mandatory Provisions

Complies	Not applicable	Requirement	Document Reference
§8.3.1: Indoor Air Quality			
❑	❑	§8.3.1: The building complies with Section 4 of ANSI/ASHRAE Standard 62.1. Provide ANSI/ASHRAE Standard 62.1-2007 Appendix H checklist to document compliance with Section 4.3 requirements.	
❑	❑	§8.3.1: The building complies with Section 5 of ANSI/ASHRAE Standard 62.1 except as noted below. When a requirement is provided below, it supersedes the requirement in ANSI/ASHRAE Standard 62.1. Provide ANSI/ASHRAE Standard 62.1-2007 Appendix H checklist to document Section 5.2.3 requirements.	
❑	❑	§8.3.1.3a1: The particulate matter filters or air cleaners have a MERV of not less than 8, and comply with and are provided where required in Section 5.9 of ANSI/ASHRAE Standard 62.1. (Include document reference for specifications.)	Not provided at this level of detail.
❑	❑	§8.3.1.4a: Smoking is not allowed inside the building.	Sheet A-703; Sign is provided, but location is not indicated at this level of detail.
❑	❑	§8.3.1.4a: Signs stating that smoking is not allowed inside the building have been posted within 10 ft (3 m) of each building entrance.	Sheet A-703; Sign is provided, but location is not indicated at this level of detail.
❑	❑	§8.3.1.4b: Any exterior designated smoking areas are located a minimum of 25 ft (7.5 m) away from building entrances, outdoor air intakes, and operable windows.	Not provided at this level of detail.
❑	❑	§8.3.1: The building complies with Section 6 of ANSI/ASHRAE Standard 62.1 except as noted below. When a requirement is provided below, it supersedes the requirement in ANSI/ASHRAE Standard 62.1. Provide ANSI/ASHRAE Standard 62.1-2007 Appendix H checklist to document Section 6.2 compliance.	
❑	❑	§8.3.1.1a: The Ventilation Rate Procedure of ANSI/ASHRAE Standard 62.1 was used to design each mechanical ventilation system in the building.	Design Narrative; Appendix E: Energy Modeling; ASHRAE Standard 62.1-2004/2007.
❑	❑	§8.3.1.3a1: (PM_{10}) The building is located in an area designated as the following (Attainment or Non-attainment) under the National Ambient Air Quality Standards for PM_{10}, as determined by the AHJ: **Status (If 8.3.1.3a1 applies, PM_{10}):** ❑ Attainment ❑ Non-attainment ❑ Particulate matter filters and air cleaning devices with MERVs of not less than 8 have been provided to clean the air at any location prior to its introduction to occupied space, as required in Section 6.2.1.1 of ANSI/ASHRAE Standard 62.1. (Include document reference for specifications.)	**Source of Information**
❑	❑	§8.3.1.3a2: (PM2.5) The building is located in an area designated as the following under the National Ambient Air Quality Standards for PM2.5, as determined by the AHJ: **Status (If 8.3.1.3a2 applies, PM2.5):** ❑ Attainment ❑ Non-attainment ❑ Particulate matter filters and air-cleaning devices with MERVs of not less than 13 have been provided to clean the air at any location prior to its introduction to occupied space, as required in Section 6.2.1.1 of ANSI/ASHRAE Standard 62.1. (Include document reference for specifications.)	**Source of Information**

Indoor Environmental Quality (IEQ) Compliance Documentation – Mandatory

Project Name: U.S. Army Criminal Investigations Command--RA 10-15	
Project Address:	Date: 12 September 2012
Designer of Record:	Telephone:
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City:	

Mandatory Provisions

Complies	Not applicable	Requirement	Document Reference
§8.3.1: Indoor Air Quality Cont.			
❑	❑	§8.3.1.3b: (Ozone) The building is located in an area designated as the following under the National Ambient Air Quality Standards for ozone as determined by the AHJ: **Status (If 8.3.1.3b applies, Ozone):** ❑ Attainment ❑ Non-attainment ❑ Air cleaning devices with a volumetric ozone removal efficiencies of not less than 40% have been provided to clean the air at any location prior to its introduction to occupied space, as required in Section 6.2.1.1 of ANSI/ASHRAE Standard 62.1. (Include document reference for specifications.)	**Source of Information**
❑	❑	§8.3.1.3c: All filter frames, air cleaner racks, access doors, and air cleaner cartridges are sealed. (Include document reference for specifications.)	Not provided at this level of detail.
❑	❑	§8.3.1: The building complies with Section 7 of ANSI/ASHRAE Standard 62.1.	
❑	❑	§8.3.1.2.1: A permanently mounted, direct total outdoor airflow measurement device has been provided that is capable of measuring the system outdoor airflow rate within an accuracy of ±15% of the minimum outdoor airflow rate. It is also capable of sending an alarm to the building operator or a signal to a building central monitoring system when flow rates are not in compliance. ❑ Exception §8.3.1.2.1: Constant volume air supply systems that use a damper position feedback system are not required to have a direct total outdoor airflow measurement device.	Not provided at this level of detail.
❑	❑	§8.3.1.5: All building entrances employ an entry mat system with a scraper surface, an absorption surface, and a finishing surface.	A-604; vestibules indicate a walk-off-mat system with an absorption and finishing surface in the entry vestibules. Scraper surfaces shall be applied outside the first entry door per ASHRAE 189.1-2009, 8.3.1.5.1 *Scraper Surface* requirements.
❑	❑	§8.3.1.5: Each scraper surface, absorption surface, and finishing surface is as wide as the entry opening, and has a minimum length of 10 ft, measured in the primary direction of travel. Exceptions §8.3.1.5: ❑ 1) Entrances to individual dwelling units. ❑ 2) Length of entry mat surfaces is allowed to be reduced due to a barrier, such as a counter, artition, or wall, or local regulations prohibiting the use of scraper surfaces outside the entry. In this case entry mat surfaces have a minimum length of 3 ft (1 m) of indoor surface, with a minimum combined length of 6 ft (2 m).	Not provided at this level of detail.
❑	❑	§8.3.1.5.1a: The scraper surface is the first surface stepped on when entering the building.	Not provided at this level of detail.
❑	❑	§8.3.1.5.1b: The scraper surface is either immediately outside or inside the entry.	Not provided at this level of detail.
❑	❑	§8.3.1.5.1c: The scraper surface is a minimum of 3 ft (1 m) long.	Not provided at this level of detail.
❑	❑	§8.3.1.5.1d: The scraper surface consists of either permanently mounted grates or removable mats with knobby or squeegee-like projections.	Not provided at this level of detail.

Indoor Environmental Quality (IEQ) Compliance Documentation – Mandatory

Project Name: U.S. Army Criminal Investigations Command--RA 10-15	
Project Address:	Date: 12 September 2012
Designer of Record:	Telephone:
Contact Person:	Telephone:
City:	

Mandatory Provisions

Complies	Not applicable	Requirement	Document Reference
❑	❑	§8.3.1.5.2a: The absorption surface is the second surface stepped on when entering the building.	Not provided at this level of detail.
❑	❑	§8.3.1.5.2b: The absorption surface is a minimum of 3 ft (1 m) long, and made from materials that can perform both a scraping action and a moisture wicking action.	Not provided at this level of detail.
❑	❑	§8.3.1.5.3a: The finishing surface is the third surface stepped on when entering the building.	Not provided at this level of detail.
❑	❑	§8.3.1.5.3b: The finishing surface is a minimum of 4 ft (1.2 m) long, and made from material that will both capture and hold any remaining particles or moisture.	Not provided at this level of detail.

Indoor Environmental Quality (IEQ) Compliance Documentation – Mandatory

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Project Address:	Date: 12 September 2012
Designer of Record:	Telephone:
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City:	

Mandatory Provisions

Complies	Not applicable	Requirement	Document Reference
§8.3.2: Thermal Environmental Conditions for Human Occupancy			
❑	❑	§8.3.2: The building has been designed in compliance with ANSI/ASHRAE Standard 55, Sections 6.1, "Design," and 6.2, "Documentation of ANSI/ASHRAE Standard 55." Provide ANSI/ASHRAE Standard 55 compliance form (Addendum H) to document compliance with section 6.2.	
		❑ Exception §8.3.2: Spaces with special requirements for processes, activities, or contents that require a thermal environment outside that which humans find thermally acceptable, such as food storage, natatoriums, shower rooms, saunas, and drying rooms.	
§8.3.3: Acoustical Control			
❑	❑	§8.3.3.1: Wall and roof-ceiling assemblies that are part of the building envelope have a composite OITC rating of 40 or greater or a composite STC rating of 50 or greater for any of the following conditions: a. Buildings within 1000 ft (300 m) of expressways. b. Buildings within 5 mi (8 km) of airports serving more than 10,000 commercial jets per year. c. Where yearly average day-night average sound levels at the property line exceed 65 decibels	
		Composite STC or OITC rating of wall and roof-ceiling assemblies that are part of the building envelope:	
❑	❑	§8.3.3.1: Fenestration that is part of the building envelope shall have an OITC or STC rating of 30 or greater for any of the following conditions: a. Buildings within 1000 ft (300 m) of expressways. b. Buildings within 5 mi (8 km) of airports serving more than 10,000 commercial jets per year. c. Where yearly average day-night average sound levels at the property line exceed 65 decibels.	
		Composite STC or OITC rating of fenestration that are part of the building envelope:	
		❑ Exception §8.3.3.1: Buildings that may have to adhere to functional and operational requirements such as factories, stadiums, storage, enclosed parking structure, and utility	
✓	❑	§8.3.3.2: Interior wall and floor/ceiling assemblies separating interior rooms and spaces have been designed in accordance with all of the following: a. Wall and floor/ceiling assemblies separating adjacent dwelling units, dwelling units and public spaces, adjacent tenant spaces, tenant spaces and public places, and adjacent classrooms have a composite STC rating of 50 or greater. b. Wall and floor/ceiling assemblies separating hotel rooms, motel rooms, and patient rooms in nursing homes and hospitals have a composite STC rating of 45 or greater. c. Wall and floor/ceiling assemblies separating classrooms from restrooms and showers have a composite STC rating of 53 or greater. d. Wall and floor/ceiling assemblies separating classrooms from music rooms, mechanical rooms, cafeteria, gymnasiums, and indoor swimming pools have a composite STC rating of 60 or greater.	Wall types are labeled on A-101. Wall type sound ratings are listed on A-601.
✓		Composite STC rating of wall and floor/ceiling assemblies separating adjacent dwelling units, dwelling units and public spaces, adjacent tenant spaces, tenant spaces and public places, and adjacent classrooms: (Attach additional table if necessary.)	Wall types are labeled on A-101. Wall type sound ratings are listed on A-601.
	✓	Composite STC rating of wall and floor/ceiling assemblies separating hotel rooms, motel rooms, and patient rooms in nursing homes and hospitals: (Attach additional table if necessary.)	
✓		Composite STC rating of wall and floor-ceiling assemblies separating classrooms from restrooms and showers: (Attach additional table if necessary.)	Wall types are labeled on A-101. Wall type sound ratings are listed on A-601.

Indoor Environmental Quality (IEQ) Compliance Documentation – Mandatory

Project Name: U.S. Army Criminal Investigations Command--RA 10-15	
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City:	

Mandatory Provisions

Complies	Not applicable	Requirement	Document Reference
✓		Composite STC rating of wall and floor/ceiling assemblies separating classrooms from music rooms, mechanical rooms, cafeteria, gymnasiums, and indoor swimming pools: (Attach additional table if necessary.)	Wall types are labeled on A-101. Wall type sound ratings are listed on A-601.

Indoor Environmental Quality (IEQ) Compliance Documentation – Mandatory

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Contact Person:	Telephone:
City:	

Mandatory Provisions

Complies	Not applicable	Requirement	Document Reference
§8.3.3: Acoustical Control Cont.			
❑	❑	§8.3.3.3: OITC values for assemblies and components have been determined in accordance with ASTM E1332. STC values for assemblies and components have been determined in accordance with ASTM E90 and ASTM E413.	
§8.3.4: Daylighting by Toplighting			
❑	✓	§8.3.4: In buildings three stories or less above grade, conditioned or unconditioned enclosed spaces that are greater than 20,000 ft^2 (2000 m^2) and directly under a roof with finished ceiling heights greater than 15 ft (4 m), and that have a lighting power allowance for general lighting equal to or greater than 0.5 W/ft^2 (5.5 W/m^2), there is a minimum fenestration area providing daylighting by toplighting for large enclosed spaces. Exceptions §8.3.4: ❑ 1) Buildings in climate zones 7 or 8. ❑ 2) Auditoria, theaters, museums, places of worship, and refrigerated warehouses.	
❑	✓	§8.3.4.1: In buildings specified in §8.3.4, a minimum of 50% of the floor area directly under a roof in spaces with a lighting power density or lighting power allowance greater than 0.5 W/ft2 (5.5 W/m2) are in the daylight area.	
❑	✓	§8.3.4.1: In buildings specified in §8.3.4, areas that are daylit have a minimum toplighting area to daylight area ratio as shown in Table 8.3.4.1. For purposes of compliance with Table 8.3.4.1, the greater of the space lighting power density and the space lighting power allowance has been used.	
❑	✓	§8.3.4.2: In buildings specified in §8.3.4, skylights used to comply with Section 8.3.4.1 have a glazing material or diffuser that has a measured haze value greater than 90%, tested according to ASTM D1003 (notwithstanding its scope) or other test method approved by the AHJ. Exceptions §8.3.4.2: ❑ 1) Skylights with a measured haze value less than or equal to 90% whose combined area does not exceed 5% of the total skylight area. ❑ 2) Tubular daylighting devices with a diffuser. ❑ 3) Skylights that are capable of preventing direct sunlight from entering the occupied space below the well during occupied hours. This shall be accomplished using one or more of the following: a. orientation b. automated shading or diffusing devices c. diffusers d. fixed internal or external baffles ❑ 4) Skylights in airline terminals, convention centers, and shopping malls.	
§8.3.5: Isolation of the Building from Pollutants in Soil			

Indoor Environmental Quality (IEQ) Compliance Documentation – Mandatory

Project Name: U.S. Army Criminal Investigations Command--RA 10-15	
Project Address:	Date: 12 September 2012
Designer of Record:	Telephone:
Contact Person:	Telephone:
City:	

Mandatory Provisions

Complies	Not applicable	Requirement	Document Reference
❑	❑	§8.3.5: Building projects that include construction or expansion of a ground-level foundation and that are located on brownfield sites or in "zone 1" counties for radon (those identified to have a significant probability of radon concentrations higher than 4 picocuries/liter on the EPA map of radon zones) have a soil gas retarding system installed between the newly constructed space and the soil. **Status (If 8.3.5 applies, Radon):** ❑ Brownfield site ❑ Building has a soil gas retarding system installed between the newly constructed space and the soil. (Include document reference for specifications.) ❑ Radon county in zone 1 ❑ Building has a soil gas retarding system installed between the newly constructed space and the soil. (Include document reference for specifications.)	**Source of Information**

The proposed and baseline buildings comply with the mandatory requirements of ANSI/ASHRAE/USGBC/IES Standard 189.1-2009. Individual certifying authenticity of the data provided in this analysis:

Signature: Date:	
Printed Name: License/Registration #:	
Company Name:	

Indoor Environmental Quality (IEQ) Compliance Documentation – Prescriptive

Project Name: U.S. Army Criminal Investigations Command--RA 10-15	
Project Address:	Date: 12 September 2012
Designer of Record:	Telephone:
Contact Person:	Telephone:
City:	

Prescriptive Option

Complies	Not applicable	Requirement	Document Reference
§8.4.1: Daylighting by Sidelighting			
✓	❑	§8.4.1.1a: For office spaces and classrooms, all north-, south-, and east-facing facades have a minimum sidelighting effective aperture as prescribed in Table 8.4.1.1.	
		North-side facade sidelighting effective aperture: 0.184	173133A_CIC_Det5-9_Architectural.rvt, Schedule: ASHRAE 189.1-2009, 8.4.1.1a Part 1/2
		South-side façade sidelighting effective aperture: 0.179	173133A_CIC_Det5-9_Architectural.rvt, Schedule: ASHRAE 189.1-2009, 8.4.1.1a Part 1/2
		East-side facade sidelighting effective aperture: 0.189	173133A_CIC_Det5-9_Architectural.rvt, Schedule: ASHRAE 189.1-2009, 8.4.1.1a Part 1/2
✓	❑	§8.4.1.1b: For office spaces and classrooms, the combined width of the primary sidelighted areas is at least 75% of the length of the facade wall.	
		North-side combined width of the primary sidelighted areas: 72'-4 3/8"	173133A_CIC_Det10-15_Architectural.rvt, Schedule: ASHRAE 189.1-2009, 8.4.1.1b Part1
		North-side length of the wall: 87'-8 3/4"	173133A_CIC_Det10-15_Architectural.rvt, Schedule: ASHRAE 189.1-2009, 8.4.1.1b Part2
		South-side combined width of the primary sidelighted areas: 48'-0"	173133A_CIC_Det10-15_Architectural.rvt, Schedule: ASHRAE 189.1-2009, 8.4.1.1b Part1
		South-side length of the wall: 51'-10 1/2"	173133A_CIC_Det10-15_Architectural.rvt, Schedule: ASHRAE 189.1-2009, 8.4.1.1b Part2
		East-side combined width of the primary sidelighted areas: 25'-0"	173133A_CIC_Det10-15_Architectural.rvt, Schedule: ASHRAE 189.1-2009, 8.4.1.1b Part1
		East-side length of the wall: 36'-5 1/2"	173133A_CIC_Det10-15_Architectural.rvt, Schedule: ASHRAE 189.1-2009, 8.4.1.1b Part2
❑	❑	§8.4.1.1c: Opaque interior surfaces of office spaces and classrooms in daylight areas have visible light reflectances greater than or equal to 80% for ceilings and 70% for partitions higher than 60 in. (1.54 m) in daylight areas.	
		Visible light reflectances of opaque interior ceiling surfaces:	Not provided at this level of detail.
		Visible light reflectances of opaque interior partitions higher than 60 in. (1.54 m):	Not provided at this level of detail.
		Exceptions §8.4.1.1: ❑ 1) Spaces with programming that requires dark conditions (e.g., photographic processing). ❑ 2) Spaces with toplighting in compliance with Section 8.3.4. ❑ 3) Daylight zones where the height of existing adjacent structures above the window is at least twice the distance between the window and the adjacent structures, measured from the	
✓	❑	§8.4.1.2: Each west-, south-, and east-facing façade of office spaces, has been designed with a shading projection whose PF is not less than 0.5.	
		1) West-facing façade shading PF: 0.51	Design Analysis, Appendix F: ANSI/ASHRAE Standard 189.1 Compliance
		or	
		1) West-facing façade shading interior PF:	
		2) South-facing façade shading PF: 0.51	Design Analysis, Appendix F: ANSI/ASHRAE Standard 189.1 Compliance
		or	
		2) South-facing façade shading interior PF:	
		3) East-facing façade shading PF: 0.51	Design Analysis, Appendix F: ANSI/ASHRAE Standard 189.1 Compliance

Indoor Environmental Quality (IEQ) Compliance Documentation – Prescriptive

Project Name: U.S. Army Criminal Investigations Command--RA 10-15	
Project Address:	Date: 12 September 2012
Designer of Record:	Telephone:
Contact Person:	Telephone:
City:	

Prescriptive Option

Complies	Not applicable	Requirement	Document Reference
		or 3) East-facing façade shading interior PF:	
✓	❑	§8.4.1.2a and b: Office spaces use one or more of the following shading devices: a. Louvers, sun shades, light shelves, and any other permanent device. b. Building self-shading through roof overhangs or recessed windows.	

Indoor Environmental Quality (IEQ) Compliance Documentation – Prescriptive

Project Name: U.S. Army Criminal Investigations Command--RA 10-15	
Project Address:	Date: 12 September 2012
Designer of Record:	Telephone:
Contact Person:	Telephone:
City:	

Prescriptive Option

Complies	Not applicable	Requirement	Document Reference
§8.4.1: Daylighting by Sidelighting Cont.			
❑	✓	§8.4.1.2a: A vertical fenestration that employs a combination of interior and external shading has been separated into multiple segments for compliance purposes. Each segment complies with the requirements for either external or interior PF. Attach additional sheets following a format similar to below: Segment A: 1) West-facing façade shading PF: Segment B: 1) West-facing façade shading interior PF: Segment C: 1) West-facing façade shading interior PF: Segment D: 2) South-facing façade shading PF: Segment E: 2) South-facing façade shading interior PF:	
		Exceptions §8.4.1.2: ❑ 1) Translucent panels and glazing systems with a measured haze value greater than 90%, tested according to ASTM D1003 (notwithstanding its scope) or other test method approved by the AHJ, and that are entirely 8 ft (2.5 m) above the floor, do not require external shading devices. ❑ 2) Vertical fenestration that receives direct solar radiation for less than 250 hours per year because of shading by permanent external buildings, existing permanent infrastructure, or topography	
§8.4.2: Materials			
❑	❑	§8.4.2: Reported emissions or VOC contents of materials specified below are from a representative product sample and conducted with each product reformulation or at a minimum every three years	Not provided at this level of detail.
❑	❑	§8.4.2: Products certified under third-party certification programs as meeting the specific emission or VOC content requirements listed below are exempted from this three-year testing requirement but shall meet all the other requirements listed below.	Not provided at this level of detail.
		§8.4.2.1: Adhesives and Sealants	
❑	❑	§8.4.2.1: All adhesives and sealants used on the interior of the building (defined as inside of the weatherproofing system and applied on site) comply with the requirements of either Section 8.4.2.1.1 or 8.4.2.1.2. (Include document reference to specifications.)	Not provided at this level of detail.
❑	❑	§8.4.2.1.1: Emissions of adhesives and sealants have been determined according to CA/DHS/EHLB/R-174 (commonly referred to as California Section 01350) and comply with the limit requirements for either office or classroom spaces, regardless of the space type. (Attach a separate summary sheet and insert document reference.)	Not provided at this level of detail.

Indoor Environmental Quality (IEQ) Compliance Documentation – Prescriptive

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Complies	Not applicable	Requirement	Document Reference
§8.4.2: Materials Cont.			
❑	❑	§8.4.2.1.2: VOC content complies with and has be determined according to the following limit requirements: (Attach a separate summary sheet and insert document reference.) a. Adhesives, sealants and sealant primers: SCAQMD Rule 1168. HVAC duct sealants have been classified as "Other" category within the SCAQMD Rule 1168 sealants table. b. Aerosol adhesives: Green Seal Standard GS-36.	Not provided at this level of detail.
		Exceptions §8.4.2.1: Not required to meet the emissions or the VOC content requirements: ❑ 1) Cleaners, solvent cements, and primers used with plastic piping and conduit in plumbing, fire suppression, and electrical systems. ❑ 2) HVAC air duct sealants when the air temperature of the space in which they are applied is less than 40°F (4.5°C).	Not provided at this level of detail.
		§8.4.2.2: Paints and Coatings	
❑	❑	§8.4.2.2: Paints and coatings used on the interior of the building (defined as inside of the weatherproofing system and applied on site) comply with either Section 8.4.2.2.1 or 8.4.2.2.2. (Include document reference to specifications.)	Not provided at this level of detail.
❑	❑	§8.4.2.2.1: Emissions of paints and coatings have been determined according to CA/DHS/EHLB/R-174 (commonly referred to as California Section 01350) and comply with the limit requirements for either office or classroom spaces, regardless of the space type. (Attach a separate summary sheet and insert document reference.)	Not provided at this level of detail.
		or	
❑	❑	§8.4.2.2.2: VOC content complies with and has be determined according to the following limit requirements: (Attach a separate summary sheet and insert document reference.) a. Architectural paints, coatings, and primers applied to interior surfaces: Green Seal Standard GS-11. b. Clear wood finishes, floor coatings, stains, sealers, and shellacs: SCAQMD Rule 1113.	Not provided at this level of detail.
		§8.4.2.3: Floor Covering Materials	
❑	❑	§8.4.2.3a: Carpet has been tested in accordance with and shown to be compliant with the requirements of CA/DHS/EHLB/R-174 (commonly referred to as California Section 01350). Products that have been verified and labeled to be in compliance with Section 9 of the CA/DHS/EHLB/R-174 comply with this requirement. (Include document reference to specifications. Attach a separate summary sheet and insert document reference.)	Not provided at this level of detail.
❑	❑	§8.4.2.3b: Hard surface flooring in office spaces and classrooms has been tested in accordance with and shown to be compliant with the requirements of CA/DHS/EHLB/R-174 (commonly referred to as California Section 01350). (Include document reference to specifications. Attach a separate summary sheet and insert document reference.)	Not provided at this level of detail.
		§8.4.2.4: Composite Wood, Wood Structural Panel, and Agrifiber Products	
❑	❑	§8.4.2.4: All composite wood, wood structural panel, and agrifiber products contain no added urea-formaldehyde resins. (Include document reference to specifications. Attach a separate summary sheet and insert document reference.)	Not provided at this level of detail.

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Complies	Not applicable	Requirement	Document Reference
❑	❑	§8.4.2.4: All laminating adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies contain no added urea-formaldehyde resins. (Include document reference to specifications. Attach a separate summary sheet and insert document reference.)	Not provided at this level of detail.

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Complies	Not applicable	Requirement	Document Reference
§8.4.2: Materials Cont.			
❑	❑	§8.4.2.4: If the no-added-urea-formaldehyde requirement cannot be met for a specific product (noted below), the project complies with one of the following (attach additional sheets if necessary):	Not provided at this level of detail.
		Name of product, manufacturer and supplier:	
		❑ California Air Resource Board's (CARB) regulation "Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products," as shown through third-party certification approved by CARB. ❑ CA/DHS/EHLB/R-174 (commonly referred to as California Section 01350) and shall comply with the limit requirements for either office or classroom spaces regardless of the space type.	
		❑ Exception §8.4.2.4: Structural panel components such as plywood, particle board, wafer board, and oriented strand board identified as "EXPOSURE 1," "EXTERIOR," or "HUD-APPROVED" are considered acceptable for interior use.	
		§8.4.2.5: Office Furniture Systems and Seating	
❑	❑	§8.4.2.5: All office furniture systems and seating installed prior to occupancy have been tested according to ANSI/BIFMA Standard M7.1.	Not provided at this level of detail.
❑	❑	§8.4.2.5: At least 95% of total number of installed office workstations and 95% of total number of seating units installed meet either the emissions concentration limits in Standard M7.1's Table E1.1 or the emission factors in Table E1.2.	Not provided at this level of detail.
❑	❑	§8.4.2.5: At least 50% of the total number of installed office workstations and 50% of the total number of seating units installed meet the VOC concentration limits of Table E1.3.	Not provided at this level of detail.
		§8.4.2.6: Ceiling and Wall Systems	
❑	❑	§8.4.2.6: Emissions of all ceiling and wall systems have been determined according to CA/DHS/EHLB/R-174 (commonly referred to as California Section 01350) and comply with the limit requirements for either office or classroom spaces regardless of the space type. (Include document reference to specifications. Attach a separate summary sheet and insert document reference.)	Not provided at this level of detail.

The proposed and baseline buildings comply with the mandatory requirements of ANSI/ASHRAE/USGBC/IES Standard 189.1-2009 and meet the Prescriptive Option requirements. Individual certifying authenticity of the data provided in this analysis:

Signature: Date:	
Printed Name: License/Registration #:	
Company Name:	

Energy Efficiency Compliance Documentation – Mandatory

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Project Address:	Date: 12 September 2012
Designer of Record:	Telephone:
Contact Person:	Telephone:
City:	

Mandatory Provisions

Complies	Not applicable	Requirement	Document Reference
§7.3.1: General			
❑	❑	§7.3.1: The building project has been designed to comply with Sections 5.4, 6.4, 7.4, 8.4, 9.4, and 10.4 of ANSI/ASHRAE/IESNA Standard 90.1.	
§7.3.2: On-Site Renewable Energy Systems			
❑	❑	§7.3.2: The building project provides for the future installation of on-site renewable energy systems with a minimum rating of 3.7 W/ft^2 or 13 Btu/h·ft^2 (40 W/m^2) multiplied by the total roof area in ft^2 (m^2).	
❑	❑	§7.3.2: The building project design shows allocated space and pathways for installation of on-site renewable energy systems and associated infrastructure. ❑ Exception: The building project has an annual daily average incident solar radiation (available to a flat plate collector oriented due south at an angle from horizontal equal to the latitude of the collector location) of less than 4.0 kW/m^2·day, accounting for existing buildings, permanent infrastructure that is not part of the building project, topography, or trees.	
§7.3.3: Energy Consumption Management			
❑	❑	§7.3.3.1: Measurement devices with remote communication capability have been provided to collect energy consumption data for each energy supply source to the building (including gas, electricity, and district energy) that exceeds the thresholds listed in Table 7.3.3.1A. Measurement devices have the capability to automatically communicate energy consumption data to a data acquisition system.	Not provided at this level of detail.
❑	❑	§7.3.3.1: For all buildings that exceed the thresholds in Table 7.3.3.1A, measurement devices with remote capability (including current sensors or flow meters) have been provided to measure energy consumption data of each subsystem for each use category that exceeds the thresholds listed in Table 7.3.3.1B. Measurement devices have the capability to automatically communicate energy consumption data to a data acquisition system.	Not provided at this level of detail.
❑	❑	§7.3.3.2: All building measurement devices have been configured to automatically communicate energy data to the data acquisition system.	Not provided at this level of detail.
❑	❑	§7.3.3.2: All building measurement devices provide daily data and record hourly energy profiles. The hourly energy profiles are capable of being used to assess building performance at least monthly.	Not provided at this level of detail.
❑	❑	§7.3.3.3: The data acquisition system is capable of electronically storing the data from the measurement devices and other sensing devices for a minimum of 36 months, and creating user reports showing hourly, daily, monthly, and annual energy consumption. ❑ Exception: Portions of buildings used as residential.	Not provided at this level of detail.

The proposed and baseline buildings comply with the mandatory requirements of ANSI/ASHRAE/USGBC/IES Standard 189.1-2009. Individual certifying authenticity of the data provided in this analysis:

Signature: Date:	
Printed Name: License/Registration #:	
Company Name:	

Energy Efficiency Compliance Documentation – Prescriptive

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Complies	Not applicable	Requirement	Document Reference
§7.4.1: General			
❑	❑	§7.4.1: When a requirement is provided below, it supersedes the requirement in ANSI/ASHRAE/IESNA Standard 90.1. For all other criteria, the building project complies with the requirements of ANSI/ASHRAE/IESNA Standard 90.1.	
§7.4.1.1: On-Site Renewable Energy Systems			
✓	❑	§7.4.1.1: The building project contains on-site renewable energy systems that together provide annual energy production equivalent to not less than 6.0 KBtu/ft^2 (20 kWh/m^2) of conditioned space. ❑ Exception: The building demonstrates compliance with both of the following and is not required to have an on-site renewable energy system: 1. An annual daily average incident solar radiation available to a flat plate collector oriented due south at an angle from horizontal equal to the latitude of the collector location of less than 4.0 kW/m^2·day, accounting for existing buildings, permanent infrastructure that is not part of the building project, topography, and trees. 2. Purchase of renewable electricity products complying with the Green-e Energy National Standard for Renewable Electricity Products of at least 7 kWh/ft^2 (75 kWh/m^2) of conditioned space each year until the cumulative purchase totals 70 kWh/ft^2 (750 kWh/m^2) of conditioned space.	Design Analysis, Appendix E: Energy Modeling
§7.4.2: Building Envelope			
❑	❑	§7.4.2: The building envelope complies with Section 5 of ANSI/ASHRAE/IESNA Standard 90.1 with the following modifications and additions.	
✓	❑	§7.4.2.1: The building envelope complies with the requirements in Tables A-1 to A-8 in Normative Appendix A. These requirements supersede the requirements in Tables 5.5-1 to 5.5-8 of ANSI/ASHRAE/IESNA Standard 90.1. ❑ Exception: Buildings that comply with Section 8.3.4 regardless of building area are exempt from the SHGC criteria for skylights.	Design Analysis, Appendix A: Project Tracking Sheet
✓	❑	§7.4.2.2: Roofs comply with the provisions of Section 5.3.2.3 and Tables A-1 to A-8 of this standard. Section 5.5.3.1.1 of ANSI/ASHRAE/IESNA Standard 90.1 and Table 5.5.3.1 of ANSI/ASHRAE/IESNA Standard 90.1 were not used.	Design Analysis, Appendix A: Project Tracking Sheet
❑	✓	§7.4.2.3: Single-rafter roofs comply with the requirements in Table A-9 in Normative Appendix A. These requirements supersede the requirements in Section A2.4.2.4 of ANSI/ASHRAE/IESNA Standard 90.1. Section A2.4.2.4 and Table A2.4.2 of ANSI/ASHRAE/IESNA Standard 90.1 were not used.	
✓	❑	§7.4.2.4: The total vertical fenestration area is less than 40% of the gross wall area. This requirement supersedes the requirement in Section 5.5.4.2.1 of ANSI/ASHRAE/IESNA Standard 90.1.	Design Analysis, Appendix A: Project Tracking Sheet
❑	❑	§7.4.2.5: For climate zones 1–5, the vertical fenestration on the west, south, and east is shaded by permanent projections that have an area-weighted average PF of not less than 0.50. ❑ Exception: Vertical fenestration that receives direct solar radiation for fewer than 250 hours per year because of shading by permanent external buildings, existing permanent infrastructure, or topography.	Design Analysis, Appendix F: ANSI/ASHRAE Standard 189.1 Compliance

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Complies	Not applicable	Requirement	Document Reference
§7.4.2: Building Envelope Cont.			
✓	❑	§7.4.2.6: For SHGC compliance, the methodology in exception (b) to Section 5.5.4.4.1 of ANSI/ASHRAE/IESNA Standard 90.1 were applied (provided that the SHGC multipliers in Table 7.4.2.6 are used). This requirement supersedes the requirement in Table 5.5.4.4.1 of ANSI/ASHRAE/IESNA Standard 90.1. Table 5.5.4.4.1 of ANSI/ASHRAE/IESNA Standard 90.1 was not applied.	Design Analysis, Appendix F: ANSI/ASHRAE Standard 189.1 Compliance
✓	❑	§7.4.2.6: The vertical fenestration is north-oriented and has a maximum SHGC of 0.10 greater than that specified in Tables A-1 through A-8 in Normative Appendix A. Separate calculations were performed for these sections of the building envelope, and these values were not averaged with any others for compliance purposes.	A-603, Window Schedule
✓	❑	§7.4.2.7: For vestibules, the exceptions to Section 5.4.3.4 of ANSI/ASHRAE/IESNA Standard 90.1 were applied (provided that climate zone 4 is deleted from exception (e) to Section 5.4.3.4 of ANSI/ASHRAE/IESNA Standard 90.1 and that climate zone 4 is added to exception (f) to Section 5.4.3.4 of ANSI/ASHRAE/IESNA Standard 90.1).	
✓	❑	§7.4.2.8: The building envelope trade-off option in Section 5.6 of ANSI/ASHRAE/IESNA Standard 90.1 was not applied (unless the procedure incorporates the modifications and additions to ANSI/ASHRAE/IESNA Standard 90.1 noted in Section 7.4.2).	
✓	❑	§7.4.2.9a: To reduce solar gains from the east and west in climate zones 1 through 4, the fenestration area and SHGC complies with the calculation in 7.4.2.9a.	173133A_CIC_BTH_Architectural: Schedule: ASHRAE 189.1-2009, 7.4.2.9a Part 1/2
❑	✓	§7.4.2.9b: To reduce solar gains from the west in climate zones 5 and 6, the fenestration area and SHGC complies with the calculation in 7.4.2.9b. Exceptions 7.4.2.9: ❑ a. Vertical fenestration that complies with the exception to Section 5.5.4.4.1 (c) of ANSI/ASHRAE/IESNA Standard 90.1. ❑ b. Buildings that have an existing building or existing permanent infrastructure within 20 ft (6 m) to the south or north that is at least half as tall as the proposed building. ❑ c. Buildings with shade on 75% of the west- and east-oriented vertical fenestration areas from existing buildings, existing permanent infrastructure, or topography at 9 a.m. and 3 p.m. on the summer solstice. ❑ d. Alterations and additions with no increase in vertical fenestration area.	
✓	❑	§7.4.2.10: The building envelope was designed and constructed with a continuous air barrier that complies with Normative Appendix B to control air leakage into, or out of, the conditioned space. All air barrier components of each envelope assembly are clearly identified on construction documents and the joints, interconnections, and penetrations of the air barrier components are detailed. ❑ Exception: Building envelopes of semiheated spaces provided that the building envelope complies with Section 5.4.3.1 of ANSI/ASHRAE/IESNA Standard 90.1.	Sheet A-311: This requirement is partially fulfilled--the remainder of the documentation requirements are not provided at this level of detail.

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Complies	Not applicable	Requirement	Document Reference
§7.4.3: Heating, Ventilating, and Air Conditioning			
❑	❑	§7.4.3: The heating, ventilating, and air conditioning complies with Section 6 of ANSI/ASHRAE/IESNA Standard 90.1 with the following modifications and additions.	
❑	❑	§7.4.3.1: The Project complies with one of the following: ❑ a. EPAct baseline. Products comply with the minimum efficiencies addressed in the National Appliance Energy Conservation Act (NAECA), Energy Policy Act (EPAct), and the Energy Indepen-dence and Security Act (EISA), or ❑ b. Higher Efficiency. Products comply with the greater of the ENERGY STAR requirements in Section 7.4.7.3 and the values in Normative Appendix C. These requirements supersede the requirements in Tables 6.8.1A to 6.8.1J of ANSI/ASHRAE/IESNA Standard 90.1. The building project complies with Sections 7.4.1.1 and 7.4.5.1 with the following modifications: 1. The on-site renewable energy systems required in Section 7.4.1.1 shall provide an annual energy production of not less than 4.0 kBtu/ft2 (13 kWh/m2). 2. The peak load reduction systems required in Section 7.4.5.1 shall be capable of reducing electric peak demand by not less than 5% of the projected peak demand.	Not provided at this level of detail.
❑	❑	§7.4.3.2: DCV is used for densely occupied spaces. This requirement supersedes the occupant density threshold in Section 6.4.3.9 of ANSI/ASHRAE/IESNA Standard 90.1.	
❑	❑	§7.4.3.2: The DCV system is designed to be in compliance with ANSI/ASHRAE Standard 62.1. Occupancy assumptions are shown in the design documents for spaces required to have DCV. All CO2 sensors used as part of a DCV system or any other system that dynamically controls outdoor air shall meet requirements a through d as listed in 7.4.3.2.	
❑	❑	§7.4.3.3: For duct sealing, Seal Level A was be used. This requirement supersedes the requirements in Table 6.4.4.2A of ANSI/ASHRAE/IESNA Standard 90.1.	Not provided at this level of detail.
❑	❑	§7.4.3.4: Systems have economizers meeting the requirements in Section 6.5.1 of ANSI/ASHRAE/IESNA 90.1 except as noted in 1 through 4 of 7.4.3.4. ❑ Exception: All the exceptions in Sections 6.5.1 and 6.5.1.3 of ANSI/ASHRAE/IESNA Standard 90.1 apply except as noted in 1 through 3 in 7.4.3.4 Exceptions.	Not provided at this level of detail.
❑	❑	§7.4.3.5: Exception (a) to Section 6.5.2.1 of ANSI/ASHRAE/IESNA Standard 90.1 have been replaced by the following: zones for which the volume of air that is reheated, re-cooled, or mixed is not greater than the larger of (1) the design outdoor airflow rate for the zone, or (2) 15% of the zone design peak supply rate.	Not provided at this level of detail.
❑	❑	§7.4.3.6: Systems have fan power limitations 10% below limitations specified in Table 6.5.3.1.1A of ANSI/ASHRAE/IESNA Standard 90.1. This requirement supersedes the requirement in Section 6.5.3.1 and Table 6.5.3.1.1A of ANSI/ASHRAE/IESNA Standard 90.1. All exceptions in Section 6.5.3.1 of ANSI/ASHRAE/IESNA Standard 90.1 shall apply.	Not provided at this level of detail.
❑	❑	§7.4.3.7a: DX systems with a capacity greater than 65,000 Btu/h (19 kW) have a minimum of two stages of cooling capacity.	Not provided at this level of detail.
❑	✓	§7.4.3.7b: Air-handling and fan-coil units with chilled-water cooling coils and supply fans with motors greater than or equal to 5 hp have their supply fans controlled by two-speed motors or variable-speed drives. At cooling demands less than or equal to 50%, the supply fan controls are able to reduce the airflow to no greater than the larger of the following: 1. Two-thirds of the full fan speed, or 2. The volume of outdoor air required to meet the ventilation requirements of ANSI/ASHRAE Standard 62.1.	

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§7.4.3: Heating, Ventilating, and Air Conditioning Cont.			
❑	❑	§7.4.3.7c: All air-conditioning equipment and air-handling units with direct expansion cooling and a cooling capacity at AHRI conditions greater than or equal to 110,000 Btu/h (32.2 kW) that serve single zones have their supply fans controlled by two-speed motors or variable-speed drives. . At cooling demands less than or equal to 50%, the supply fan controls are able to reduce the airflow to no greater than the larger of the following: 1. Two-thirds of the full fan speed, or 2. The volume of outdoor air required to meet the ventilation requirements of ANSI/ASHRAE Standard 62.1.	Not provided at this level of detail.
❑	❑	§7.4.3.7d: d. All DX and chilled-water VAV units are equipped with variable-speed fans that result in less than 30% power at 50% flow. ❑ Exception 7.4.3.7: When air ventilation rates or air exchange rates require constant volume fan operation.	Not provided at this level of detail.
❑	❑	§7.4.3.8: Each fan system has an energy recovery system when the system's supply airflow rate exceeds the value listed in Table 7.4.3.8 based on the climate zone and percentage of outdoor air at design condi-tions. Where a single room or space is supplied by multiple units, the aggregate supply cfm (L/s) of those units was used in applying this requirement.	Not provided at this level of detail.
❑	❑	§7.4.3.8: Energy recovery systems required by this section have at least 60% energy recovery effectiveness. Sixty percent energy recovery effectiveness shall mean a change in the enthalpy of the outdoor air supply equal to 60% of the difference between the outdoor air and return air enthalpies at design condi-tions. Provisions have been made to bypass or control the energy recovery system to permit air economizer operation as required by Section 7.4.3.4.	Not provided at this level of detail.
❑	✓	§7.4.3.9: In addition to the requirements in Section 6.5.7.1 of ANSI/ASHRAE/IESNA Standard 90.1, commercial kitchen Type I and Type II hood systems have variable-speed control for exhaust and makeup air fans to reduce hood airflow rates at least 50% during those times when cooking is not occurring and the cooking appliances are up to temperature in a standby, ready-to-cook mode. All exceptions in Section 6.5.7.1 of ANSI/ASHRAE/IESNA Standard 90.1 shall apply.	
❑	❑	§7.4.3.10: Duct insulation complies with the minimum requirements in Tables C-9 and C-10 in Normative Appendix C. These requirements supersede the requirements in Tables 6.8.2A and 6.8.2B of ANSI/ASHRAE/IESNA Standard 90.1.	Not provided at this level of detail.
❑	❑	§7.4.3.11: Pipe insulation complies with the minimum requirements in Table C-11 in Normative Appendix C. These requirements supersede the requirements in Table 6.8.3 of ANSI/SHRAE/IESNA Standard 90.1. The exceptions a through e in Section 6.4.4.1.3 of ANSI/ASHRAE/IESNA Standard 90.1 shall apply.	Not provided at this level of detail.
❑	✓	§7.4.3.12: In hotels and motels with over 50 guest rooms, the lighting switched outlets, television, and HVAC equipment serving each guest room are automatically controlled such that the lighting, switched outlets, and televisions will be turned off and the HVAC setpoint raised at least 5°F (3°C) in the cooling mode and lowered at least 5°F (3°C) in the heating mode whenever the guest room is unoccupied.	

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Complies	Not applicable	Requirement	Document Reference
§7.4.4: Service Water Heating			
❑	❑	§7.4.4: The service water heating complies with Section 7 of ANSI/ASHRAE/IESNA Standard 90.1 with the following modifications and additions.	
❑	❑	§7.4.4.1: Equipment complies with the minimum efficiencies in Table C-12 in Normative Appendix C. These requirements supersede the requirements in Table 7.8 of ANSI/ASHRAE/IESNA Standard 90.1.	Not provided at this level of detail.
❑	❑	§7.4.4.2: Pipe insulation complies with Section 7.4.3.11. These requirements supersede the requirements in Section 7.4.3 of ANSI/ASHRAE/IESNA Standard 90.1.	Not provided at this level of detail.
❑	✓	§7.4.4.3: Pools heated to more than 90°F (32°C) have side and bottom surfaces insulated on the exterior with a minimum insulation value of R-12 (R-2.1).	
§7.4.5: Power			
❑	❑	§7.4.5: The power complies with Section 8 of ANSI/ASHRAE/IESNA Standard 90.1 with the following modifications and additions.	
❑	❑	§7.4.5.1: The Building project contains automatic systems, such as demand limiting or load shifting, that are capable of reducing electric peak demand of the building by not less than 10% of the projected peak demand. Standby power generation is not used to achieve the reduction in peak demand.	Not provided at this level of detail.
§7.4.6: Lighting			
❑	❑	§7.4.6: The lighting complies with Section 9 of ANSI/ASHRAE/IESNA Standard 90.1 as modified by Addendum i and the following modifications and additions.	
✓	❑	§7.4.6.1: The lighting power allowance is a maximum of 0.9 multiplied by the values determined in accordance with Sections 9.5 and 9.6. This requirement supersedes the requirements in Sections 9.5 and 9.6 of ANSI/ASHRAE/IESNA Standard 90.1.	173133A_CIC_BTH_Electrical.rvt: Schedule: ASHRAE 189.1 Lighting LPD
❑	❑	§7.4.6.2: Offices 250 ft2 (25 m2) or smaller; classrooms of any size; lecture, training, or vocational rooms of less than 1000 ft2 (100 m2); multipurpose rooms of less than 1000 ft2 (100 m2); conference rooms and meeting rooms less than 1000 ft2 (100 m2); and meeting centers are equipped with occupant sensor(s) to automatically turn lighting OFF within 30 minutes of all occupants leaving a space and allow “manual OFF” control. In addition, all occupancy sensor controls are either “manual ON” or bi-level “automatic ON” programmed to a low light level combined with multi-level circuitry and “manual ON” switching for higher light levels. Where such occupancy sensors are utilized within a daylit area and daylighting controls are utilized, the occupancy sensors work in conjunction with the daylighting controls complying with Section 7.4.6.5.	Not provided at this level of detail.
❑	❑	§7.4.6.3: The lighting in the areas listed in 7.4.63 are controlled by an occupant sensor with multi-level switching or dimming system that reduces lighting power a minimum of 50% when no persons are present. ❑ Exception: Areas lit by HID lighting with a lighting power density of 0.8 W/ft2 or less.	Not provided at this level of detail.
❑	❑	§7.4.6.4: Lighting in any area within a building that is required to be continuously illuminated for reasons of building security or emergency egress does not exceed 0.1 W/ft2 (1 W/m2). Any additional egress and security are controlled by an automatic control device that turns off the additional lighting.	Design Analysis, Appendix F: ANSI/ASHRAE Standard 189.1 Compliance

Energy Efficiency Compliance Documentation – Prescriptive

Project Name: U.S. Army Criminal Investigations Command--RA 10-15	
Project Address:	Date: 12 September 2012
Designer of Record:	Telephone:
Contact Person:	Telephone:
City:	

Prescriptive Option

Complies	Not applicable	Requirement	Document Reference
§7.4.6: Lighting Cont.			
❑	❑	§7.4.6.5: Lighting in all daylight zones, including daylight zones under skylights and daylight zones adjacent to vertical fenestration, where the combined daylight zone per enclosed space is greater than 250 ft2 (25 m2), are provided with controls that automatically reduce lighting power in response to available daylight by either: ❑ a. Continuous daylight dimming, or ❑ b. A combination of stepped switching and daylight-sensing automatic controls, which are capable of incrementally reducing the light level in steps automatically and turning the lights off automatically. Exceptions: ❑ 1. Window display and exhibition lighting. ❑ 2. Conference rooms greater than 250 ft2 (25 m2) that have a lighting control system with at least four scene options. ❑ 3. Lighting in conference rooms that is dimmable and controlled by dimming controls that are located within the space and accessible to the space occupants. ❑ 4. Saunas, steam rooms, and spaces containing swimming pools or spa pools. ❑ 5. Spaces where medical procedures are performed. ❑ 6. Spaces within dwelling units. ❑ 7. Spaces within hotel and motel guest rooms and suites. ❑ 8. Daylight zones where the height of existing adjacent structures above the window is at least twice the distance between the window and adjacent structures, measured from the top of the glazing.	Not provided at this level of detail.
❑	❑	§7.4.6.6: Occupancy sensors have “manual ON”, “automatic OFF” controls. ❑ Exception: Occupancy sensor controls required in Section 7.4.6.3.	Not provided at this level of detail.
❑	❑	§7.4.6.7: All outdoor lighting controls comply with Section 9 of ANSI/ASHRAE/IESNA Standard 90.1 with the following modifications and additions. For lighting of building facades, parking lots, garages, canopies (sales and non-sales), and all outdoor sales areas, automatic controls are installed to reduce the sum of all lighting power (in watts) by a minimum of 50% one hour after normal business closing and to turn off outdoor lighting within 30 minutes after sunrise. Exceptions: ❑ 1. Lighting required by a health or life safety statute, ordinance, or regulation, including but not limited to, emergency lighting. ❑ 2. Lighting that is controlled by a motion sensor and photocontrol. ❑ 3. Lighting for facilities that have equal lighting requirements at all hours and are designed to operate conti-nuously. ❑ 4. Temporary outdoor lighting. ❑ 5. Externally illuminated signs and signs that are internally illuminated or have integral lamps.	Not provided at this level of detail.

Energy Efficiency Compliance Documentation – Prescriptive

Project Name: U.S. Army Criminal Investigations Command--RA 10-15	
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Prescriptive Option

Complies	Not applicable	Requirement	Document Reference
§7.4.7: Other Equipment			
❑	❑	§7.4.7: All other equipment complies with Section 10 of ANSI/ASHRAE/IESNA Standard 90.1 with the following modifications and additions.	
❑	❑	§7.4.7.1: Motors comply with the minimum requirements in Table C-13 in Normative Appendix C. These requirements supersede the requirements in Section 10.4.1 and Table 10.8 of ANSI/ASHRAE/IESNA Standard 90.1.	Not provided at this level of detail.
❑	❑	§7.4.7.2: Supermarkets with a floor area of 25,000 ft^2 (2500 m^2) or greater recover waste heat from the condenser heat rejection on permanently installed refrigeration equipment meeting *one* of the following criteria: ❑ 1. 25% of the refrigeration system full load total heat rejection. ❑ 2. 80% of the space heat, service water heating and dehumidification reheat.	Not provided at this level of detail.
❑	❑	§7.4.7.2: If a recovery system is installed in the refrigeration system, the system does not increase the saturated condensing temperature at design conditions by more than 5°F (3°C) and does not impair other head pressure control/energy reduction strategies.	Not provided at this level of detail.
❑	❑	§7.4.7.3: The following equipment within the scope of the applicable Energy Star program complies with the relevant criteria required to achieve the Energy Star label, if installed prior to the issuance of the certificate of occupancy (see Section 7.4.7.3 a–h for a complete equipment list): ❑ a. Appliances ❑ b. Heating and cooling equipment ❑ c. Electronics ❑ d. Office equipment ❑ e. Water heaters ❑ f. Lighting ❑ g. Commercial food service equipment ❑ h. Other products ❑ Exception: Products with minimum efficiencies addressed in the Energy Policy Act (EPAct) and the Energy Independence and Security Act (EISA), if the project complies with Section 7.4.3.1a.	Not provided at this level of detail.
❑	✓	§7.4.7.4a: Commercial refrigerators and freezers comply with the minimum efficiencies in Table C-14 in Normative Appendix C.	
❑	✓	§7.4.7.4a: There are no prohibited open refrigerated display cases not covered by strips or curtains.	
❑	✓	§7.4.7.4a: Lighting loads for commercial reach-in refrigerator/freezer display cases, including all power supplies or ballasts, do not exceed 42 watts per door for case doors up to 5 ft (1.5 m) in height and 46 watts per door for case doors greater than 5 ft (1.5 m) in height.	
❑	✓	§7.4.7.4b: Commercial clothes washers comply with the minimum efficiencies in Table C-15 in Normative Appendix C.	

Energy Efficiency Compliance Documentation – Prescriptive

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Prescriptive Option

Complies	Not applicable	Requirement	Document Reference
§7.4.8: Energy Cost Budget			
✓	❑	§7.4.8: The Energy Cost Budget option in Section 11 of ANSI/ASHRAE/IESNA Standard 90.1 was not used.	

The proposed and baseline buildings comply with the mandatory requirements of ANSI/ASHRAE/USGBC/IES Standard 189.1-2009 and meet the Prescriptive Option requirements. Individual certifying authenticity of the data provided in this analysis:

Signature:	Date:	
Printed Name:	License/Registration #:	
Company Name:		

Water Use Efficiency Compliance Documentation – Mandatory

Project Name: U.S. Army Criminal Investigations Command--RA 10-15	
Project Address:	Date: 12 September 2012
Designer of Record:	Telephone:
Contact Person:	Telephone:
City:	

Mandatory Provisions

Complies	Not applicable	Requirement	Document Reference
§6.3.1: Site Water Use Reductions			
❑	❑	§6.3.1.1: Minimum of 60% of the area of the improved landscape shall be in bio-diverse planting of native plants and adapted plants other than turfgrass. ❑ Exception: Athletic fields, golf courses and driving ranges shall be excluded from this requirement for schools, residential common areas, or public recreational facilities.	
❑	❑	§6.3.1.2: Automatic irrigation systems have been hydrozoned to water different plant materials.	
❑	❑	§6.3.1.2: Sprinklers are not spraying water directly on a building and are not located within 3 ft (0.92 m) of any building.	
❑	❑	§6.3.1.3: Irrigation system is controlled by a qualifying smart controller.	
❑	❑	§6.3.1.3: Smart controller uses evapotranspiration and weather data or on-site rain sensors or moisture sensors to adjust irrigation schedules.	
❑	❑	§6.3.1.3: Qualifying smart controllers meet the following minimum requirements: irrigation adequacy – 80 % min ET_o; irrigation excess – not to exceed 10%. ❑ Exception: Temporary irrigation systems used for plant establishment are exempt from this requirement.	
§6.3.2: Building Water Use Reductions			
✓	❑	§6.3.2.1a: Water closets (flushometer) have a max flush rate of 1.28 gal (4.8 L) per flush.	The flush rate is included in the "Type Comment" parameter for each fixture type in the Architectural BIM.
❑	✓	§6.3.2.1b: Water closets (tank-type) have a max flush rate of 1.28 gal (4.8 L) per flush.	Tank-type fixtures are not used in the design.
✓	❑	§6.3.2.1c: Urinals have a max flush rate of 0.5 gal (1.9 L) per flush.	The flush rate is included in the "Type Comment" parameter for each fixture type in the Architectural BIM.
✓	❑	§6.3.2.1d: Public lavatory faucets have a max flow rate of 0.5 gpm (1.9 L/min).	The flow rate is included in the "Type Comment" parameter for each fixture type in the Architectural BIM.
❑	✓	§6.3.2.1e: Public metering faucets have a max flow rate of 0.25 gal (1.0 L) per cycle.	Metering faucets are not used in the design.
❑	✓	§6.3.2.1f: Residential lavatory faucets have a max flow rate of 1.5 gpm (5.7 L/min).	Residential lavatory faucets are not used in the design.
✓	❑	§6.3.2.1g: Residential kitchen faucets have a max flow rate of 2.2 gpm (8.3 L/min).	The flow rate is included in the "Type Comment" parameter for each fixture type in the Architectural BIM.
❑	✓	§6.3.2.1h: Residential showerheads have a max flow rate of 2.0 gpm (7.6 L/min).	Shower heads are not used in the design.
❑	❑	§6.3.2.1i: Residential shower compartments have a max flow rate of 2.0 gpm (7.6 L/min). ❑ Exception: If the shower compartment exceeds 2,600 in^2 (1.7 m^2), an additional flow of 2.0 gpm (7.6 L/min) is permitted.	The flow rate is not included in the shower compartment family.
❑	✓	§6.3.2.2a: Dwelling unit clothes washers comply with the ENERGY STAR Program Requirements and have a max water factor of 6.0 gal/ft^3 or 800 L/m^3 of drum capacity.	
❑	✓	§6.3.2.2a: Dwelling unit dishwashers comply with the ENERGY STAR Program Requirements and have a max water factor of 5.8 gal or 22 L/full operating cycle.	
❑	✓	§6.3.2.2b: Publicly accessible clothes washer have a max water factor of 7.5 gal/ft^3 or 1000 L/m^3 of drum capacity.	
❑	✓	§6.3.2.3a: Potable water has not been used for once-through cooling.	

Water Use Efficiency Compliance Documentation – Mandatory

Project Name: U.S. Army Criminal Investigations Command--RA 10-15	
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City:	

Mandatory Provisions

Complies	Not applicable	Requirement	Document Reference
❑	❑	§6.3.2.3b: Cooling towers have makeup and blowdown meters, conductivity controllers, and overflow alarms.	Not provided at this level of detail.
❑	❑	§6.3.2.3b: Cooling towers have efficient drift eliminators.	Not provided at this level of detail.
❑	❑	§6.3.2.3b: Drift reductions amount to a max of 0.002% of the recirculated water volume for counterflow towers and 0.005% of the recirculated water flow for cross-flow towers.	Not provided at this level of detail.
❑	❑	§6.3.2.3c: Condensate from AC units with a capacity > 65,000 Btu/h is recovered for reuse.	There are no AC units greater than 65 MBh in the design.
❑	✓	§6.3.2.3c: Condensate from steam systems is recovered for reuse.	Steam is not accounted for in the design.
❑	✓	§6.3.2.4a: Potable water has not been used for roof spray systems to thermally condition the roof.	Roof spray systems are not included in the design.
❑	❑	§6.3.2.4b: Potable water might have been used during the plant establishment period, but it has not been used to permanently irrigate the vegetated landscape.	
§6.3.3: Water Consumption Measurement			
❑	❑	§6.3.3.1: Measurement devices with remote communication capability have been provided to collect the water consumption data for each water supply source (e.g., potable, reclaimed, rainwater) to the building that exceeds the thresholds listed in Table 6.3.3A.	Not provided at this level of detail.
❑	❑	§6.3.3.1: Both potable and reclaimed water entering the building are being monitored or sub-metered.	Not provided at this level of detail.
❑	❑	§6.3.3.1: Sub-meters have been provided for individual leased, rented, or other tenant or sub-tenant space with any building totaling > 50,000 ft^2 (5000 m^2).	Not provided at this level of detail.
❑	❑	§6.3.3.1: Sub-meters have been provided for any project, building, tenant, or sub-tenant space within a project or building where water consumption > 1,000 gal/day (3800 L/day).	Not provided at this level of detail.
❑	❑	§6.3.3.2: Measurement devices installed on systems using more than 1,000 gal/day (3800 L/day) of water are configured to communicate water consumption data to a meter data management system. At a minimum meters provide daily data and record hourly consumption	Not provided at this level of detail.
❑	❑	§6.3.3.2: Sub-metering with remote communication capabilities has been provided to collect water use data for each of the subsystems listed in Table 6.3.3B.	Not provided at this level of detail.
❑	❑	§6.3.3.3: The meter data management system is capable of electronically storing water meter, monitoring systems, and sub-meter data.	Not provided at this level of detail.
❑	❑	§6.3.3.3: The meter data management system creates user reports showing calculated hourly, daily, monthly, and annual water consumption for each measurement device and sub-meter.	Not provided at this level of detail.
❑	❑	§6.3.3.3: The meter data management system provides alarm notification capabilities to support the requirements of §10.3.2.1.2.	Not provided at this level of detail.

The proposed and baseline buildings comply with the mandatory requirements of ASHRAE/USGBC/IES Standard 189.1-2009. Individual certifying authenticity of the data provided in this analysis:

Signature: Date:	
Printed Name: License/Registration #:	
Company Name:	

Water Use Efficiency Compliance Documentation – Prescriptive

Project Name: U.S. Army Criminal Investigations Command--RA 10-15	
Project Address:	Date: 12 September 2012
Designer of Record:	Telephone:
Contact Person:	Telephone:
City:	

Prescriptive Option

Complies	Not applicable	Requirement	Document Reference
§6.4.1: Site Water Use Reductions			
❑	❑	§6.4.1: Golf courses and driving ranges use only municipally-reclaimed water and/or alternate on-site sources of water; in other landscaped areas, a maximum of one third of *improved landscape* area is irrigated with potable water – all other irrigation is provided from alternate on-site sources or municipally reclaimed water.	
❑	❑	§6.4.1: Athletic fields have been excluded from the calculation of *improved landscape* for schools, residential common areas, and public recreational facilities.	
❑	❑	§6.4.1: Potable water has been temporarily used on newly installed landscape during the landscape establishment period.	
❑	❑	§6.4.1: The amount of potable water used during the landscape establishment period does not exceed 70% ET_o for turfgrass and 55% ET_o for other plantings.	
❑	❑	§6.4.1: Municipally reclaimed water is available at a water main within 200 ft (60 m) of the project site and has been used in lieu of potable water during the landscape establishment period.	
❑	❑	§6.4.1: Once the landscape establishment period ended, irrigation water use complied with the requirements listed in §6.3.1 and §6.4.1.	
§6.4.2: Building Water Use Reductions			
❑	❑	§6.4.2.1a: For cooling tower makeup water having < 200 ppm (200 mg/L) of total hardness (expressed as calcium carbonate), at least 5 cycles of concentration have been achieved.	Not provided at this level of detail.
❑	❑	§6.4.2.1b: For cooling tower makeup water having > 200 ppm (200 mg/L) of total hardness (expressed as calcium carbonate), at least 3.5 cycles of concentration have been achieved. ❑ Exception: Where the total dissolved solids concentration of the discharge water exceeds 1500 mg (1500 ppm/L), or silica exceeds 150 ppm (150 mg/L), measured as silicon dioxide, before the above cycles of concentration are reached.	Not provided at this level of detail.
❑	✓	§6.4.2.2a: Commercial food service operations use high-efficiency pre-spray valves per §6.4.2.2.	
❑	✓	§6.4.2.2b: Commercial food service operations use dishwashers that are ENERGY STAR certified.	
❑	✓	§6.4.2.2c: Commercial food service operations use boilerless/connectionless food steamers that consume no more than 2.0 gal/h (7.5 L/h).	
❑	✓	§6.4.2.2d: Commercial food service operations use combination ovens that consume no more than 10 gal/h (38 L/h).	
❑	✓	§6.4.2.2e: Commercial food service operations use air-cooled ice machines that are ENERGY STAR certified.	
❑	✓	§6.4.2.2f: Commercial food service operations are equipped with hands-free faucet controllers within the food preparation area of the kitchen and dish room, including pot sinks and washing	
❑	✓	§6.4.2.3a: Medical and lab facilities use only water-efficient steam sterilizers.	
❑	✓	§6.4.2.3a: Steam sterilizers use water-tempering devices that only allow water to flow when the discharge of condensate or hot water from the sterilizer > 140°F.	
❑	✓	§6.4.2.3a: Vacuum sterilizers use mechanical vacuum equipment in place of Venturi-type vacuum systems.	
❑	✓	§6.4.2.3b: Medical and lab facilities use film processor water recycling units where large frame X-ray films of more than 6 inches are processed. Small dental X-ray equipment is exempt from this requirement.	
❑	✓	§6.4.2.3c: Where the digital networks are installed, medical and lab facilities use digital imaging and radiography systems.	

Water Use Efficiency Compliance Documentation – Prescriptive

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Prescriptive Option

Complies	Not applicable	Requirement	Document Reference
❑	✓	§6.4.2.3d: Medical and lab facilities use a dry-hood scrubber system. For projects that determine wet scrubber systems are necessary, the scrubber is equipped with a water recirculation system.	
❑	✓	§6.4.2.3d: For medical and lab facilities that include hood washdown systems, the hood is equipped with self-closing valves	

Water Use Efficiency Compliance Documentation – Prescriptive

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Complies	Not applicable	Requirement	Document Reference
Building Water Use Reductions Cont.			
❑	✓	§6.4.2.3e: Medical and lab facilities use only dry vacuum pumps, unless fire and safety codes require a liquid ring pump.	
❑	✓	§6.4.2.3f(1): For filtration processes in medical and lab facilities, pressure gauges are used to determine and display when to backwash or change cartridges.	
❑	✓	§6.4.2.3f(2): For ion exchange and softening processes in medical and lab facilities, recharge cycles have been set by volume of water treated or based upon conductivity or hardness.	
❑	✓	§6.4.2.3f(3): For reverse osmosis and nanofiltration equipment in medical and lab facilities with a capacity > 100 L/hour, reject water does not exceed 60% of the feed water and is used as scrubber feed water or for other beneficial uses on the project site.	
❑	✓	§6.4.2.3f(4): For medical and lab facilities, simple distillation has not been used as a means of water purification.	
❑	✓	§6.4.2.3g: Food service operations that are located within medical or lab faciliites comply with	
❑	✓	§6.4.3a: Ornamental fountains are supplied either by alternate on-site sources of water or municipally reclaimed water.	
❑	✓	§6.4.3a: Fountains are equipped with makeup water meters.	
❑	✓	§6.4.3a: Fountains are equipped with leak detection devices that shut off water flow if a leak of more than 1 gallon per hour is detected.	
❑	✓	§6.4.3a: Fountains are able to recirculate, filter, and treat all water for reuse within the system. ❑ Exception: For fountains where alternate on-site sources of water or municipally reclaimed water are not available with 500 ft (150 m) of the building project site, potable water is allowed to be used for water features with less than 10,000 gal (38,000 L) capacity.	
❑	✓	§6.4.3b(1): Pools and spas must recover filter backwash water for reuse on landscaping or other applications, or treat and reuse backwash water within the system.	
❑	✓	§6.4.3b(2): For pools and spas that use removable cartridges, only reusable cartridges and systems are used.	
❑	✓	equipment has been used that includes a pressure drop gauge to determine when the filter needs to be backwashed and a sight glass enabling the operator to determine when to stop the backwash cycle.	
❑	✓	§6.4.3b(3): If pool and spa splash troughs are provided, they drain back into the pool or spa.	

The proposed and baseline buildings comply with the mandatory requirements of ASHRAE/USGBC/IES Standard 189.1-2009 and meet the Prescriptive Option requirements. Individual certifying authenticity of the data provided in this analysis:

Signature: Date:	
Printed Name: License/Registration #:	
Company Name:	

PARSONS BRINCKERHOFF *Computation Sheet*

page	1 of 1
made by	RAGVI SINHA
date	09.12.2012
checked by	
date	

subject RA 10-15 LPD CALCULATIONS

EMERGENCY LIGHTS : (2) 1W LED LAMP FIXTURES

002 - VESTIBULE WEST : 65 ft^2 / 1 EMERGENCY LIGHT		= 0.03 W/ft^2
114 - CORRIDOR : 454 ft^2 / 3		= 0.01
120 - CORRIDOR : 121 ft^2 / 1		= 0.01
131 - CORRIDOR : 772 ft^2 / 4		= 0.01
139 - CORRIDOR : 124 ft^2 / 1		= 0.01
105 - CORRIDOR : 220 ft^2 / 1		= 0.01
102 - CORRIDOR : 140 ft^2 / 1		= 0.01
101 - VISITOR WAITING : 251 ft^2 / 1		= 0.01
003 - VESTIBULE NORTH : 65 ft^2 / 1		= 0.03